



# Search Report

## EIC 1700

STIC Database Tracking Number: 236557

To: MICHAEL BERNSHTEYN  
Location: REM-10D25  
Art Unit: 1713  
Tuesday, September 18, 2007  
  
Case Serial Number: 10/538730

From: USHA SHRESTHA  
Location: EIC1700  
REM-4B28 / REM-4B31  
Phone: (571)272-3519  
  
[usha.shrestha@uspto.gov](mailto:usha.shrestha@uspto.gov)

### Search Notes

Examiner BERNSHTEYN:

Please see the search results, feel free to contact me if you have any questions or if you like to refine the search query. Thank you for using STIC services!

Regards,  
Usha





# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

➤ I am an examiner in Workgroup:  Example: 1713

➤ Relevant prior art found, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf - Cnt  
SEP 06 10:00  
Pat. & T.M. Office

Access DB# 236537

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Michael Bernshstein Examiner #: 81515 Date: 06/05/07  
Art Unit: 1713 Phone Number 30 272-2411 Serial Number: 10/538,730  
Mail Box and Bldg/Room Location: Room 10025 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Gradient copolymers soluble or at least dispersible in water  
Inventors (please provide full names): Olivier Guenet

Earliest Priority Filing Date: 12/11/2003

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please, try to find a process with an agent of claims 8-10 with all the claimed limitations.

Thank you  
M. Bernshstein

## WHAT IS CLAIMED IS:

1. A gradient copolymer comprising at least two monomers,
  - a) the first ( $M_1$ ), the homopolymer of which corresponding to a  $Tg_1$  of less than  
5        20°C, representing at least 50% by weight of the total weight of the copolymer,
  - b) the second ( $M_2$ ), the homopolymer of which corresponding to a  $Tg_2$  of greater than  
20°C, representing at most 50% by weight of the total weight of the copolymer,  
at least one of the monomers being hydrophilic and representing at least 5% by weight  
of the total weight of the copolymer,
- 10        said copolymer comprising at least one monomer  $M_i$  such that the probability of  
encountering  $M_i$  in any standardized position  $x$  situated on the polymer chain is  
nonzero.
- 15        2. The copolymer as claimed in claim 1, wherein  $Tg_1$  is between -150 and 20°C.
3. The copolymer as claimed in claim 1, having an average masses of between  
5000 g/mol and 1 000 000 g/mol and exhibiting a polydispersity index of between 1.1  
and 2.5.
- 20        4. The copolymer as claimed in claim 1, wherein the hydrophilic monomer represents at  
least 10% by weight of the total weight of the copolymer.
5. The copolymer as claimed in claim 1, wherein the hydrophilic monomer is selected  
from the group consisting of:  
25        - ethylenic carboxylic acids, acrylic acid, methacrylic acid, itaconic acid, fumaric  
acid;  
- acrylates and methacrylates of polyethylene glycol or of glycol which are or are  
not substituted on their end functional group by alkyl, phosphate, phosphonate or  
sulfonate groups;  
30        - amides of unsaturated carboxylic acids, acrylamide, methacrylamide and their  
N-substituted derivatives;

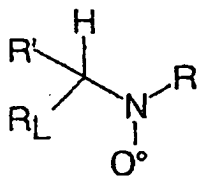
- aminoalkyl acrylates, methacrylates, aminoalkylmethacrylamides;;
- carboxylic anhydrides carrying a vinyl bond, maleic anhydride, fumaric anhydride;
- vinylamides, vinylpyrrolidone, vinylacetamide;
- vinylamines, such as vinylmorpholine, vinylamine; and
- vinylpyridine.

6. The copolymer as claimed in claim 1, wherein the monomer  $M_1$  is selected from the group of monomers consisting of:

- linear or branched  $C_1$ - $C_{12}$  alkyl acrylates,
- polyethylene glycol acrylate polyethylene glycol (meth)acrylate,
- dienes, butadiene and isoprene.

7. A process for producing a gradient copolymer comprising polymerizing by solution or bulk controlled radical polymerization, at a temperature of between 10 and 160°C, in the presence of a radical polymerization initiator and of an agent for controlling the polymerization, a mixture of monomers comprising at least two monomers, the first ( $M_1$ ), the homopolymer of which corresponding to a  $T_{g1}$  of less than 20°C, representing at least 50% by weight of the total weight of the mixture, the second ( $M_2$ ), the homopolymer of which corresponding to a  $T_{g2}$  of greater than 20°C, representing at most 50% by weight of the total weight of the mixture, at least one of the monomers having to be hydrophilic and represent at least 5% by weight of the total weight of the mixture.

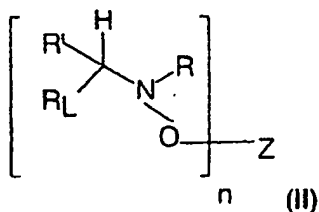
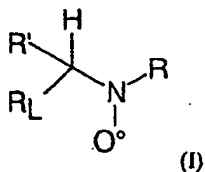
8. The process as claimed in claim 7, wherein the agent for controlling the polymerization is a nitroxide of general formula:



- where R' and R, which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups; preferably, R and R' are tert-butyl groups;

- and where R<sub>L</sub> is a monovalent group with a molar mass of greater than 16 g/mol which can be a phosphorus group or an aromatic group.

9. The process as claimed in claim 7, wherein the polymerization initiator and the control agent are advantageously replaced by a mixture composed of alkoxyamine corresponding to the following general formula (II) and of nitroxide corresponding to the general formula (I):



in which:

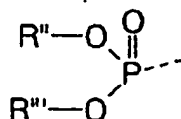
- n is an integer of less than or equal to 8 and preferably of between 1 and 3,  
 - Z is a carrying monovalent or polyvalent radical of styryl, acryloyl or methacryloyl type,

- where R' and R, which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups; preferably, R and R' are tert-butyl groups;

- and where  $R_L$  is a monovalent group with a molar mass of greater than 16 g/mol which can be a phosphorus group or an aromatic group, the nitroxide (I) representing from 0 to 20% by weight of the total weight of the mixture.

5

10. The process as claimed in claim 8, wherein,  $R_L$  is a phosphonate group of formula:



10

- where  $R''$  and  $R'''$ , which are identical or different and which are optionally connected so as to form a ring, are alkyl groups having between 1 and 40 carbon atoms which are optionally substituted by hydroxyl, alkoxy or amino groups; in particular,  $R''$  and  $R'''$  are ethyl groups; the nitroxide (I) representing from 0 to 20% by weight of the total weight of the mixture.

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11. A process for the aqueous dissolution, of the gradient copolymer of claim 1 comprising:

20

1) dissolving the copolymer in a ketone solution, at a level of solid of between 20 and 90%,

2) neutralizing the solution obtained in 1, if necessary, by addition of a molar solution either of acid or of base, the acid or base choice being conditioned by the chemical nature of the hydrophilic monomer,

25

3) adding water, with vigorous stirring, to the solution obtained in 1 or optionally in 2 in a proportion such that the level of solid obtained is between 1 and 80%; optionally, the water can be replaced by water/alcohol mixtures in proportions ranging from 99/1 to 50/50;

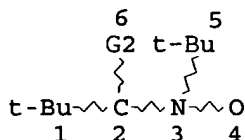
4) evaporating the ketone until the desired level of solid is obtained.

12. (canceled)
- 5 13. The gradient copolymer of claim 1 comprising a paint, adhesive, glue or cosmetic formulation.
14. (canceled)
15. (canceled)
- 10 16. (canceled)
17. The copolymer of claim 1 wherein the second monomer ( $M_2$ ), the homopolymer of which corresponding to a  $T_{g2}$  of greater than  $50^{\circ}\text{C}$
- 15 18. The copolymer as claimed in claim 2, wherein  $T_{g1}$  is between  $-120$  and  $15^{\circ}\text{C}$ .
19. The copolymer as claimed in claim 3, exhibiting a polydispersity index of between 1.1 and 2.
- 20 20. The process of claim 7 wherein said controlled radical polymerization, occurs at a temperature of between  $25$  and  $130^{\circ}\text{C}$ .



=&gt; d que 135

L2 11 SEA FILE=REGISTRY ABB=ON PLU=ON (188526-94-5/BI OR  
25035-68-1/BI OR 25036-16-2/BI OR 29407-83-8/BI OR  
300811-93-2/BI OR 30970-31-1/BI OR 31671-56-4/BI OR  
702659-07-2/BI OR 702659-09-4/BI OR 702659-10-7/BI OR  
702659-11-8/BI)  
L3 2 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND 1/P  
L4 177 SEA FILE=HCAPLUS ABB=ON PLU=ON L3  
L10 STR



VAR G2=P/CB

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE

L12 165 SEA FILE=REGISTRY SSS FUL L10  
L14 230 SEA FILE=HCAPLUS ABB=ON PLU=ON L12  
L16 165 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 AND POLYMER?/SC, SX  
L17 138999 SEA FILE=HCAPLUS ABB=ON PLU=ON "POLYMERIZATION CATALYSTS"  
+PFT,NT,OLD,NEW/CT  
L18 103 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND L17  
L19 95 SEA FILE=HCAPLUS ABB=ON PLU=ON L18 AND CAT/RL  
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,PY  
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L22 92 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 AND L17  
L23 50 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND (1840-2003)/PRY,AY  
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MER?  
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,PY  
L28 55 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 OR L25 OR L27  
L33 17 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 AND POLYMERIZATION  
INITIATOR?  
L34 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 AND (1840-2003)/PRY,AY  
,PY  
L35 62 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 OR L34

=&gt; d 135 1-62 ibib ed abs hitstr hitind

L35 ANSWER 1 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:569040 HCAPLUS

DOCUMENT NUMBER: 143:80018

TITLE: Use of water-soluble polymer structures obtained

by a controlled radical polymerization as a dispersant and a milling aid in mineral comminution

INVENTOR(S): Suau, Jean Marc; Jacquemet, Christian; Kensicher, Yves

PATENT ASSIGNEE(S): Coatex, Fr.

SOURCE: Fr. Demande, 88 pp.  
CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2864455	A1	20050701	FR 2003-15385	20031224
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FR 2864455	B1	20060317		
CA 2548802	A1	20050714	CA 2004-2548802	20041222
			<--	
WO 2005063371	A2	20050714	WO 2004-FR3330	20041222
			<--	
WO 2005063371	A3	20051013		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1708803	A2	20061011	EP 2004-816460	20041222
			<--	
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU			
US 2007185258	A1	20070809	US 2006-584147	20060622
			<--	
PRIORITY APPLN. INFO.:			FR 2003-15385	A 20031224
			<--	
			WO 2004-FR3330	W 20041222

OTHER SOURCE(S): MARPAT 143:80018

ED Entered STN: 01 Jul 2005

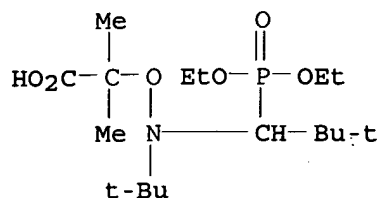
AB A water-soluble polymer of a controlled structure obtained by a controlled radical polymerization implementing an alcoxyamine as a polymerization initiator is used as a dispersant and/or an agent for grinding of pigments and/or mineral charges in an aqueous suspension.

IT 654636-62-1

(initiator for controlled radical polymerization)

RN 654636-62-1 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, 6-oxide (CA INDEX NAME)



IC ICM B01F017-52

ICS B02C023-06; C09C003-04; C09C003-10; C09D017-00; C08F002-38;  
C08F020-06; C08F004-00; C09K007-00

CC 46-4 (Surface Active Agents and Detergents)

Section cross-reference(s): 37, 43, 49, 57, 58, 62

IT 654636-62-1

(initiator for controlled radical polymerization)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 2 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:547687 HCAPLUS

DOCUMENT NUMBER: 143:80747

TITLE: Controlled radical acrylic copolymer thickeners

INVENTOR(S): Schmidt, Scott Charles; Callais, Peter Anthony;  
Macy, Noah Eliot; Guerrett, Olivier

PATENT ASSIGNEE(S): Arkema Inc., USA

SOURCE: PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005056739	A1	20050623	WO 2004-US34236	20041015

&lt;--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG

CA 2547063	A1	20050623	CA 2004-2547063	20041015
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EP 1725637	A1	20061129	EP 2004-820348	20041015
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R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
IE, IT, LI, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR

JP 2007512413	T	20070517	JP 2006-541164	20041015
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US 2007082827	A1	20070412	US 2006-578060	20060502
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PRIORITY APPLN. INFO.:

US 2003-525549P

P 20031126

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WO 2004-US34236

W 20041015

ED Entered STN: 24 Jun 2005

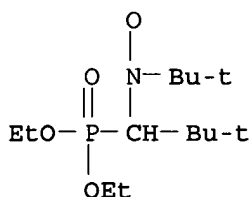
AB The present invention relates to acrylic block copolymers synthesized by a controlled radical process, and their use as thickeners in oil-based compns. The acrylic copolymers are especially useful as viscosity index improvers in lubricating oil.

IT 188526-94-5 300811-93-2 300811-94-3

(controlled living radical polymerized acrylic copolymer thickeners)

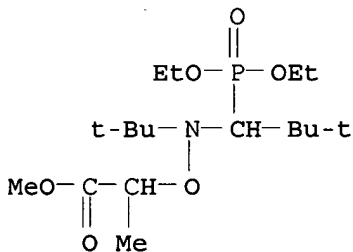
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



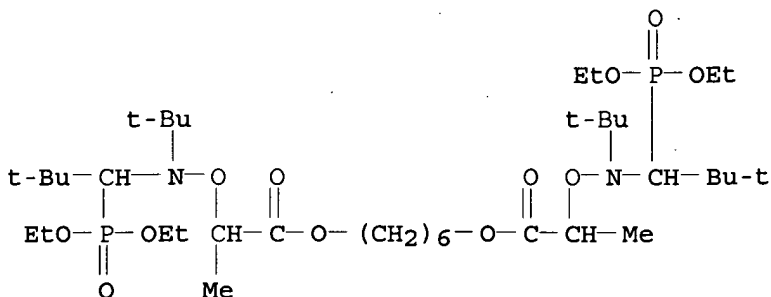
RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



RN 300811-94-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX NAME)



IC ICM C10M145-14  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 Section cross-reference(s): 35, 36, 66  
 ST controlled living radical polymn acrylic block copolymer thickener; di  
 tri star block copolymer lubricating oil additive viscosifier; acrylic  
 gradient copolymer thickener block soly parameter  
 lubricant micelle  
 IT Polymerization  
 Polymerization catalysts  
 (living, radical; controlled living radical polymerized acrylic  
 copolymer thickeners)  
 IT 188526-94-5 300811-93-2 300811-94-3  
 (controlled living radical polymerized acrylic copolymer thickeners)  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 3 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2005:521786 HCAPLUS  
 DOCUMENT NUMBER: 143:60699  
 TITLE: Method for preparation of block copolymers and  
 their uses in adhesive compositions  
 INVENTOR(S): Magnet, Stephanie; Guerret, Olivier; Passade,  
 Boupat Nicolas; Laurichesse, Christian; El Bounia,  
 Nour Eddine  
 PATENT ASSIGNEE(S): Arkema, Fr.  
 SOURCE: Fr. Demande, 40 pp.  
 CODEN: FRXXBL  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2863618	A1	20050617	FR 2003-14505	20031211
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FR 2863618	B1	20060310		
WO 2005066232	A1	20050721	WO 2004-FR3153	20041208
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RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1718688	A1	20061108	EP 2004-805661	20041208
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CN 1914238	A	20070214	CN 2004-80041601	20041208
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JP 2007516326	T	20070621	JP 2006-543582	20041208
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KR 2007001074	A	20070103	KR 2006-711465	20060609
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US 2007021568	A1	20070125	US 2006-582535	20060609
			<--	
IN 2006DN03368	A	20070831	IN 2006-DN3368	20060612
			<--	
PRIORITY APPLN. INFO.:			FR 2003-14505	A 20031211
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			WO 2004-FR3153	W 20041208

ED Entered STN: 17 Jun 2005

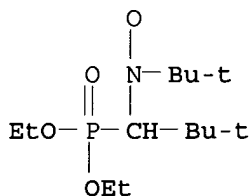
AB Polymers, useful as hot-melt, pressure-sensitive adhesives, have linear or star blocks, are manufactured by radical polymerization controlled by nitroxides and initiated by alkoxyamines of nitroxides, and have  $\geq 1$  soft block with  $T_g < 0^\circ$  and  $\geq 1$  hard block having  $T_g$  higher than room temperature. A typical ABA triblock polymer was manufactured by radical polymerization of 118 kg Bu acrylate (I) (B blocks) in PhEt in the presence of (EtO)<sub>2</sub>P(:O)C(CMe<sub>3</sub>)N(CMe<sub>3</sub>)O (II) and a carbonyldimethylmethyl ether of II at 114° until 50% I conversion, removal of unreacted I and solvent, and polymerization of 100 kg styrene (A blocks) in the presence of the intermediate.

IT 188526-94-5 188526-94-5D, carbonyldimethylmethyl ether

(preparation of block copolymers by nitroxide-controlled, alkoxyamine-initiated radical polymerization for hot-melt, pressure-sensitive adhesives)

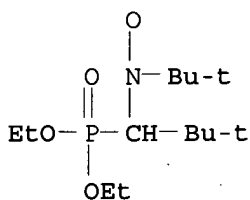
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



IC ICM C08F293-00

ICS C09J153-00; C09J007-02; G09F003-10

CC 37-3 (Plastics Manufacture and Processing)

IT **Polymerization catalysts**

(radical; preparation of block copolymers by nitroxide-controlled, alkoxyamine-initiated radical polymerization for hot-melt,

pressure-sensitive adhesives)

IT 107-21-1D, Ethylene glycol, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 110-63-4D, 1,4-Butanediol, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 504-63-2D, 1,3-Propanediol, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 629-11-8D, 1,6-Hexanediol, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 839-90-7D, 1,3,5-Tris(2-hydroxyethyl)cyanuric acid, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 7429-90-5D, Aluminum, salts with alkoxyamino phosphonate esters 7439-89-6D, Iron, salts with alkoxyamino phosphonate esters 7439-95-4D, Magnesium, salts with alkoxyamino phosphonate esters 7439-96-5D, Manganese, salts with alkoxyamino phosphonate esters 7439-98-7D, Molybdenum, salts with alkoxyamino phosphonate esters 7440-02-0D, Nickel, salts with alkoxyamino phosphonate esters 7440-05-3D, Palladium, salts with alkoxyamino phosphonate esters 7440-06-4D, Platinum, salts with alkoxyamino phosphonate esters 7440-22-4D, Silver, salts with alkoxyamino phosphonate esters 7440-31-5D, Tin, salts with alkoxyamino phosphonate esters 7440-32-6D, Titanium, salts with alkoxyamino phosphonate esters 7440-33-7D, Tungsten, salts with alkoxyamino phosphonate esters 7440-47-3D, Chromium, salts with alkoxyamino phosphonate esters 7440-48-4D, Cobalt, salts with alkoxyamino phosphonate esters 7440-50-8D, Copper, salts with alkoxyamino phosphonate esters 7440-57-5D, Gold, salts with alkoxyamino phosphonate esters 7440-66-6D, Zinc, salts with alkoxyamino phosphonate esters 7440-67-7D, Zirconium, salts with alkoxyamino phosphonate esters 7440-70-2D, Calcium, salts with alkoxyamino phosphonate esters 43190-26-7D, 1,3,5-Tris(2-Aminoethyl)cyanuric acid, diethoxyphosphinyl-tert-butylmethyl-tert-butylaminoxy derivs. 53544-93-7 188526-94-5 188526-94-5D, carbonyldimethylmethyl ether (preparation of block copolymers by nitroxide-controlled, alkoxyamine-initiated radical polymerization for hot-melt, pressure-sensitive adhesives)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 4 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:492328 HCAPLUS

DOCUMENT NUMBER: 141:38999

TITLE: **Gradient copolymers** that are as soluble or at least as dispersible in water as in organic solvents

INVENTOR(S): Guerret, Olivier

PATENT ASSIGNEE(S): Atofina, Fr.

SOURCE: Fr. Demande, 24 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2848557	A1	20040618	FR 2002-15852	20021213
			<--	
FR 2848557	B1	20060707		
CA 2509828	A1	20040701	CA 2003-2509828	20031211

WO 2004055071 A1 20040701 WO 2003-FR3669 20031211

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003296815 A1 20040709 AU 2003-296815 20031211

EP 1583781 A1 20051012 EP 2003-813161 20031211

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 CN 1738841 A 20060222 CN 2003-80108848 20031211

JP 2006509882 T 20060323 JP 2004-560552 20031211

MX 2005PA06309 A 20060208 MX 2005-PA6309 20050613

US 2006058467 A1 20060316 US 2005-538730 20050613

PRIORITY APPLN. INFO.: FR 2002-15852 A 20021213

WO 2003-FR3669 W 20031211

OTHER SOURCE(S): MARPAT 141:38999

ED Entered STN: 18 Jun 2004

AB Amphiphilic **gradient copolymers** with the title property, useful in paints, adhesives, and cosmetics, comprise at least units of a monomer (M1) that forms homopolymers with glass-transition temps. (Tg) <20° and of a monomer (M2) that forms homopolymers with Tg >20°, with the latter monomer being >50% of the copolymer, ≥1 of the monomers being hydrophilic and being ≥5% of the copolymer, so that the gradient chain structure (G) is governed by the relation  $G(x) = \sum [Mi](x)$ , where x is the normalized position on the polymer chain and [Mi](x) is the concentration relative to this position of the monomer Mi (expressed in mol). These polymers are manufactured by radical polymn at 10-160° in the presence of an initiator and R'RLCHNRO• [R', R = C1-40 alkyl (optionally substituted by OH, alkoxy, or amino), or may bond together to form a ring, RL = group having mol. weight >16 such as (R''O)(R'''O)P(:O), R'', R''' = C1-40 alkyl (optionally substituted by OH, alkoxy, or amino), or may bond together to form a ring] (I) as mediators or in the presence of a combination of I and [R'RLCHNRO]nZ (R', RL, R = same as in I, Z = mono- or multivalent radical bearing styryl-, acryl-, or methacryl-type groups, n < 8). A typical polymer was manufactured by heating (EtO)2P(:O)C(CMe3)N(CMe3)OCHMeOCOME3, (EtO)2P(:O)C(CMe3)N(CMe3)O• 0.18, Et acrylate 480, styrene 60, and methacrylic acid 60 g 198 min at 110-115°.

IT 300811-93-2

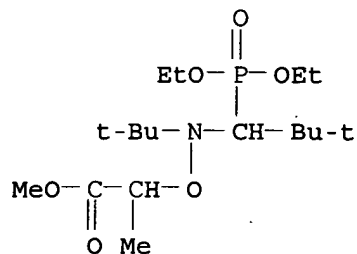
(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or



alkoxyamine-amine oxide mixts.)

RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)

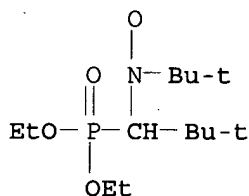


IT 188526-94-5

(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



IC ICM C08F220-12

ICS C08F293-00; C08F002-38; C09J133-06; C09D133-06; A61K007-00; C08F236-04; C08F220-06

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 38, 42, 62

ST **gradient copolymer** water thinnable paint adhesive  
cosmetic; butyl acrylate styrene methacrylic acid gradient polymer  
manuf; nitroxide mediator gradient acrylic polymer manuf; alkoxyamine  
initiator gradient acrylic polymer manuf

IT Amphiphiles

Hydrogels

(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)

IT Amine oxides

(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)

IT Paints

(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts. for paints)

IT Adhesives

(manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or

- alkoxyamine-amine oxide mixts. for paints for adhesives)
- IT   Cosmetics  
     (manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts. for paints for cosmetics)
- IT   Polymerization  
     **Polymerization catalysts**  
     (radical; manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)
- IT   702659-10-7P   702659-11-8P  
     (gel; manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)
- IT   300811-93-2  
     (manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)
- IT   25035-68-1P, Ethyl acrylate-methacrylic acid-styrene copolymer  
     25036-16-2P, Butyl acrylate-methacrylic acid-styrene copolymer  
     29407-83-8P, Methacrylic acid-methyl acrylate-styrene copolymer  
     30970-31-1P, Ethyl acrylate-methacrylic acid-methyl acrylate-styrene copolymer  
     31671-56-4P, Butyl acrylate-ethyl acrylate-methacrylic acid-styrene copolymer  
     (manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)
- IT   702659-07-2P, Butyl acrylate-methacrylic acid-styrene copolymer salt with 2-amino-2-methylpropanol   702659-09-4P  
     (manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)
- IT   188526-94-5  
     (manufacture of water-dispersible or -soluble amphiphilic **gradient copolymers** in presence of catalyst-amine oxide or alkoxyamine-amine oxide mixts.)

REFERENCE COUNT:           3       THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 5 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:       2004:272048 HCAPLUS

DOCUMENT NUMBER:       140:311983

TITLE:                   Polymerizable compositions and presensitized lithographic plates basic plate

INVENTOR(S):           Shimada, Kazuto

PATENT ASSIGNEE(S):   Fuji Photo Film Co., Ltd., Japan

SOURCE:                Jpn. Kokai Tokkyo Koho, 47 pp.

CODEN: JKXXAF

DOCUMENT TYPE:         Patent

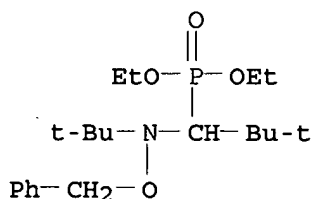
LANGUAGE:              Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004102112	A	20040402	JP 2002-266586	20020912
			<--	
PRIORITY APPLN. INFO.:			JP 2002-266586	20020912
			<--	

ED Entered STN: 02 Apr 2004  
 AB The disclosed polymerizable composition comprises a photothermal converter, a polymerizable compound, and an initiator having functional group of formulas SCX:A of ONRR1[ X = amino, alkyl, aryl, amino carbonyl, alkenyl, halo; R and R1 may combine to form a ring]. The neg.-working presensitized plate which uses the composition is also disclosed. The presensitized plate shows excellent sensitivity to IR lasers.  
 IT 224575-61-5  
 (initiators; for IR laser sensitive polymerizable compns. for presensitized plates)  
 RN 224575-61-5 HCAPLUS  
 CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (phenylmethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



IC ICM G03F007-031  
 ICS G03F007-00; G03F007-004; G03F007-029  
 CC 74-4 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST **polymn initiator** IR laser sensitive presensitized plate  
 IT 644-32-6 3052-61-7 27474-40-4 81913-53-3 91523-31-8  
 92687-20-2 131428-12-1 224575-61-5 342006-65-9  
 676460-79-0 676460-80-3  
 (initiators; for IR laser sensitive polymerizable compns. for presensitized plates)

L35 ANSWER 6 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:120516 HCAPLUS

DOCUMENT NUMBER: 140:164357

TITLE: Alkoxyamines from  $\beta$ -phosphorated nitroxides and their use in radical polymerization

INVENTOR(S): Couturier, Jean Luc; Guerret, Olivier; Bertin, Denis

PATENT ASSIGNEE(S): Atofina, Fr.

SOURCE: Fr. Demande, 30 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

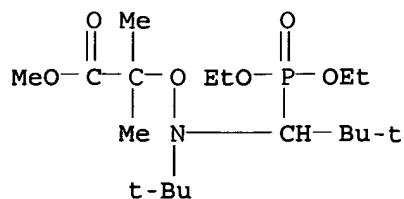
LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

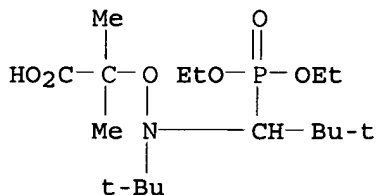
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2843393	A1	20040213	FR 2002-10030	20020807
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FR 2843393	B1	20051230		
FR 2843394	A1	20040213	FR 2003-3169	20030502
			<--	
FR 2843394	B1	20051230		
CA 2494826	A1	20040219	CA 2003-2494826	20030723

WO 2004014926 A2 20040219 WO 2003-FR2328 20030723  
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 WO 2004014926 A3 20040408  
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 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,  
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
 NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,  
 SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,  
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 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
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 AU 2003271824 A1 20040225 AU 2003-271824 20030723  
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 EP 1527079 A2 20050504 EP 2003-753662 20030723  
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 CN 1688592 A 20051026 CN 2003-822926 20030723  
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 JP 2005534712 T 20051117 JP 2004-526948 20030723  
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 AT 348833 T 20070115 AT 2003-753662 20030723  
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 MX 2005PA01530 A 20050505 MX 2005-PA1530 20050207  
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 US 2006142511 A1 20060629 US 2006-523481 20060131  
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 PRIORITY APPLN. INFO.: FR 2002-10030 A 20020807  
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 FR 2003-3169 A 20030502  
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 WO 2003-FR2328 W 20030723  
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 OTHER SOURCE(S): MARPAT 140:164357  
 ED Entered STN: 13 Feb 2004  
 AB R2OCOCR2ON(CMe3)CH[P:O(OEt)2]CMe2CHR1(R = C1-3 alkyl, R1 = H or OCOR3,  
 R3 = C1-20 alkyl, R2 = H, C1-8 alkyl, Ph, Li, Na, K, H4N, BuN, or  
 Bu3HN, with the exclusion of R1 = H and R2 = C1-6 alkyl) are useful as  
 initiators for radical polymerization of acrylates with high propagation rate  
 consts. while decreasing the risk of out-of-control reaction in the  
 manufacture of high mol. weight polymers.  
 IT 288583-07-3P 654636-62-1P 654636-63-2P  
 654636-64-3P  
 (alkoxyamines from  $\beta$ -phosphorated nitroxides for catalysts in  
 radical polymerization of acrylates)  
 RN 288583-07-3 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2,2-dimethyl-, methyl ester, 6-oxide (CA INDEX NAME)



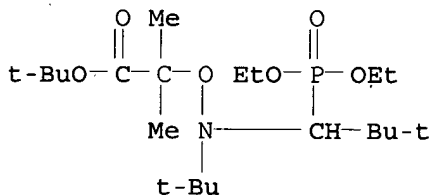
RN 654636-62-1 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, 6-oxide (CA INDEX NAME)



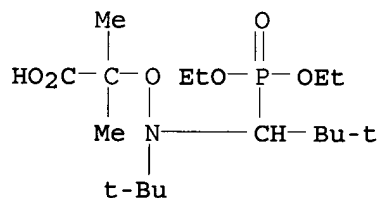
RN 654636-63-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, 1,1-dimethylethyl ester, 6-oxide (9CI) (CA INDEX NAME)



RN 654636-64-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, 6-oxide, sodium salt (9CI) (CA INDEX NAME)

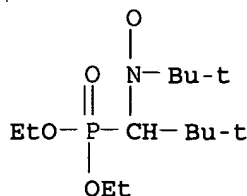


● Na

IT 188526-94-5

(precursor; alkoxyamines from  $\beta$ -phosphorated nitroxides for catalysts in radical polymerization of acrylates)

RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



IC ICM C07F009-40  
 ICS C08F002-38; C08F004-32; C08F120-18; C08F220-14; C08F220-18

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 23

IT **Polymerization catalysts**

(radical; alkoxyamines from  $\beta$ -phosphorated nitroxides for catalysts in radical polymerization of acrylates)

IT 288583-07-3P 654636-62-1P 654636-63-2P  
 654636-64-3P

(alkoxyamines from  $\beta$ -phosphorated nitroxides for catalysts in radical polymerization of acrylates)

IT 2052-01-9, 2-Bromo-2-methylpropionic acid 23426-63-3, Methyl  
 2-Bromo-2-methylpropionate 23877-12-5, tert-Butyl  
 2-Bromo-2-methylpropionate 188526-94-5

(precursor; alkoxyamines from  $\beta$ -phosphorated nitroxides for catalysts in radical polymerization of acrylates)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 7 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:14783 HCAPLUS

DOCUMENT NUMBER: 140:199816

TITLE: Initiator-grafted silica particles for controlled  
 free radical polymerization: Influence of the  
 initiator structure on the grafting density

AUTHOR(S): Parvole, Julien; Laruelle, Gael; Guimon, Claude;  
 Francois, Jeanne; Billon, Laurent

CORPORATE SOURCE: Laboratoire de Physico-Chimie des Polymeres, UMR  
 5067 CNRS - Universite de Pau et Pays de l'Adour  
 Helioparc Pau-Pyrenees, Pau, 64053/09, Fr.

SOURCE: Macromolecular Rapid Communications (2003  
 ), 24(18), 1074-1078

CODEN: MRCOE3; ISSN: 1022-1336

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

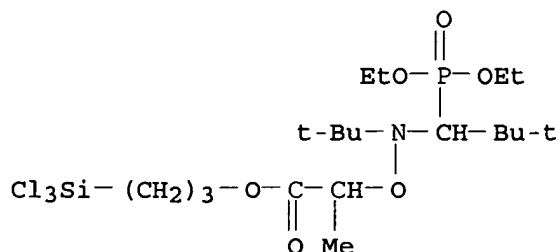
LANGUAGE: English

ED Entered STN: 09 Jan 2004

AB A series of organic-inorg. hybrid particles were synthesized by a  
 self-assembled layer of different initiators, immobilized on silica  
 particles and used for controlled radical polymerization We use three  
 different initiator systems for atom-transfer radical polymerization (ATRP),  
 unimol. nitroxide mediated polymerization (NMP), and bimol. NMP, for the  
 development of the hybrid inorg./organic particles. After preliminary  
 qual. characterization by X-ray spectroscopy (XPS) and  
 Fourier-transformed IR (FT-IR) measurements, the hybrid nanoparticles

were studied by thermogravimetric anal. (TGA) to determine and discuss the initiator graft d. in terms of steric hindrance.

IT 663174-63-8  
(grafting of; initiator-grafted silica particles for controlled free radical polymerization: Influence of the initiator structure on the grafting d.)  
RN 663174-63-8 HCAPLUS  
CN 3,7-Dioxa-4-aza-6-phosphanonoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 3-(trichlorosilyl)propyl ester, 6-oxide (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts  
(radical; initiator-grafted silica particles for controlled free radical polymerization: Influence of the initiator structure on the grafting d.)

IT 663174-62-7 663174-63-8 663174-64-9  
(grafting of; initiator-grafted silica particles for controlled free radical polymerization: Influence of the initiator structure on the grafting d.)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 8 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:2855 HCAPLUS

DOCUMENT NUMBER: 140:77932

TITLE: Cationic alkoxyamines and their use in producing nanoparticles from natural or synthetic clays  
INVENTOR(S): Muehlebach, Andreas; Nesvadba, Peter; Kramer, Andreas

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 62 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004000809	A1	20031231	WO 2003-EP6370	20030617

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,

SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
 ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG

CA 2486958 A1 20031231 CA 2003-2486958 20030617

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AU 2003279373 A1 20040106 AU 2003-279373 20030617

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EP 1515950 A1 20050323 EP 2003-740262 20030617

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 CN 1662499 A 20050831 CN 2003-814665 20030617

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JP 2005538964 T 20051222 JP 2004-514745 20030617

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MX 2004PA12885 A 20050331 MX 2004-PA12885 20041217

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US 2005215691 A1 20050929 US 2004-519030 20041222

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PRIORITY APPLN. INFO.: EP 2002-405520 A 20020624

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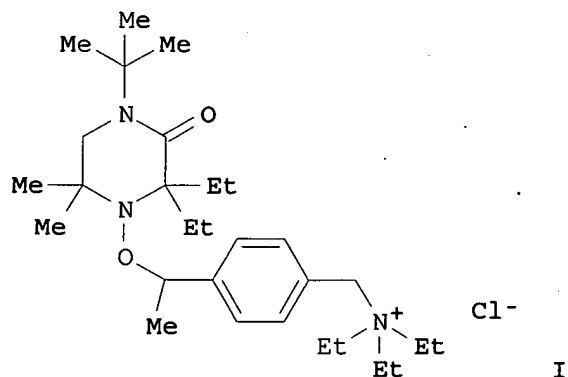
WO 2003-EP6370 W 20030617

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OTHER SOURCE(S): MARPAT 140:77932

ED Entered STN: 02 Jan 2004

GI



AB The instant invention relates to cationic alkoxyamines such as I, which are useful as **polymerization initiators/regulators** in a controlled stable free radical polymerization of unsatd. compds. in the presence of nanoparticles of natural or synthetic clays to produce intercalated and/or exfoliated nanoparticles. The invention also relates to improved nanocomposites produced by this process and to the use of these nanocomposite compns. as, for example, coatings, sealants, caulks, adhesives and as plastic additives.

IT 188526-94-5P 639809-58-8P, Diethyl  
 [1- [tert-butyl- [1- (3-dimethylaminopropylcarbamoyl) ethoxy] amino] -2,2-

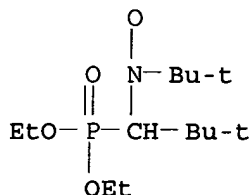


dimethylpropyl]phosphonate

(catalyst precursor; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

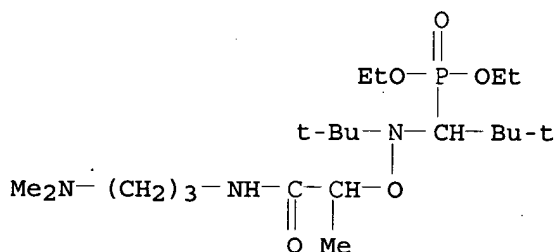
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 639809-58-8 HCAPLUS

CN Phosphonic acid, [1,2-bis(1,1-dimethylethyl)-4,10-dimethyl-5-oxo-3-oxa-2,6,10-triazaundec-1-yl]-, diethyl ester (9CI) (CA INDEX NAME)

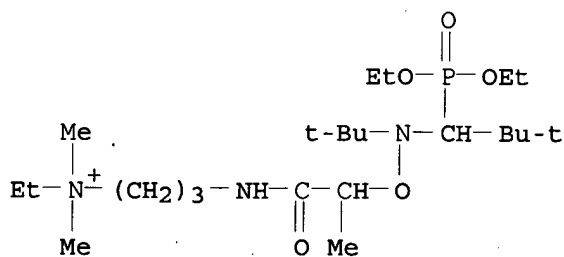


IT 639809-57-7P

(cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

RN 639809-57-7 HCAPLUS

CN 3,7-Dioxa-6,10-diaza-4-phosphatridecan-13-aminium, 5,6-bis(1,1-dimethylethyl)-4-ethoxy-N-ethyl-N,N,8-trimethyl-9-oxo-, bromide, 4-oxide (9CI) (CA INDEX NAME)



● Br<sup>-</sup>

IC ICM C07D211-94

- ICS C07D241-08; C07F009-38; C08F002-00
- CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 23, 27, 28, 38, 42
- ST cationic alkoxyamine initiator unsatd compd polymn nanocomposite  
manuf; plastic additive nanocomposite cationic alkoxyamine  
**polymn initiator**; caulking nanocomposite cationic  
alkoxyamine **polymn initiator**; adhesive  
nanocomposite cationic alkoxyamine **polymn initiator**  
; tertiary butyldiethyloxopiperazinyl ethyl benzyltriethylammonium  
chloride initiator polymn nanocomposite manuf; sealant nanocomposite  
cationic alkoxyamine **polymn initiator**; coating  
nanocomposite cationic alkoxyamine **polymn initiator**
- IT Nanocomposites  
**Polymerization catalysts**  
(cationic alkoxyamines for catalysts/regulators for polymerization of  
unsatd. compds. in presence of nanoparticles from natural or  
synthetic clays for manufacture of nanocomposites)
- IT 188526-94-5P 639809-49-7P, 1-tert-Butyl-4-[1-[4-(  
(chloromethyl)phenyl)ethoxy]-3,3-diethyl-5,5-dimethylpiperazin-2-one  
639809-51-1P, 1-tert-Butyl-3,3-diethyl-5,5-dimethyl-4-[1-[4-(4-  
methylpiperazin-1-ylcarbonyl)phenyl]ethoxy]piperazin-2-one  
639809-53-3P, 2-Chloro-N-(3-dimethylaminopropyl)propionamide  
639809-54-4P, 2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-  
dimethylaminopropyl)propionamide 639809-56-6P, 2-(2,6-Diethyl-4-  
hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-  
dimethylaminopropyl)propionamide 639809-58-8P, Diethyl  
[1-[tert-butyl-[1-(3-dimethylaminopropyl)carbamoyl]ethoxy]amino]-2,2-  
dimethylpropylphosphonate 639809-60-2P, 2,6-Diethyl-1-(1-  
phenylethoxy)-2,3,6-trimethylpiperidin-4-one O-(3-dimethylaminopropyl)  
oxime 639809-63-5P, Bis[2,6-diethyl-1-[1-(3-  
dimethylaminopropyl)carbamoyl]ethoxy]-2,3,6-trimethylpiperidin-4-yl]  
terephthalate 639809-65-7P, N-(3-Dimethylaminopropyl)-2-(4-hydroxy-  
2,2,6,6-tetramethylpiperidin-1-yloxy)propionamide 639809-67-9P,  
2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-  
dimethylaminopropyl)-2-methylpropionamide 639809-68-0P,  
2-Bromo-N-(3-dimethylaminopropyl)-2-methylpropionamide 639809-72-6P,  
3-Bromopropyl 2-bromopropionate 639809-73-7P  
(catalyst precursor; cationic alkoxyamines for catalysts/regulators  
for polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposites)
- IT 639809-48-6P, [4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-  
oxopiperazin-1-yloxy)ethyl]benzyl]triethylammonium chloride  
639809-50-0P, 4-[4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-  
oxopiperazin-1-yloxy)ethyl]benzoyl]-1,1-dimethylpiperazin-1-ium iodide  
639809-52-2P, [3-[2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-  
yloxy)propionylamino]propyl]dimethylethylammonium bromide  
639809-55-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-  
yloxy)propionylamino]propyl]dimethylethylammonium bromide  
639809-57-7P 639809-59-9P, [3-[2,6-Diethyl-1-(1-  
phenylethoxy)-2,3,6-trimethylpiperidin-4-ylideneaminoxy]propyl]dimeth  
ylethylammonium bromide 639809-61-3P, Bis[[3-[2-(2,6-diethyl-4-  
hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethy  
lethylammonium bromide] terephthalate 639809-64-6P,  
Ethyl [3-[2-(4-hydroxy-2,2,6,6-tetramethylpiperidin-1-  
yloxy)propionylamino]propyl]dimethylammonium bromide 639809-66-8P,  
[3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-2-  
methylpropionylamino]propyl]dimethylethylammonium bromide  
639809-69-1P, Benzyl [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-  
trimethylpiperidin-1-yloxy)-2-methylpropionylamino]propyl]dimethylammo  
nium chloride 639809-70-4P, Benzyl [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-

trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylammonium chloride 639809-71-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionyloxy]propyl]tributylphosphonium bromide

(cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 9 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:772709 HCAPLUS

DOCUMENT NUMBER: 140:5349

TITLE: First Nitroxide-Mediated Controlled Free-Radical Polymerization of Acrylic Acid

AUTHOR(S): Couvreur, Laurence; Lefay, Catherine; Belleney, Joeel; Charleux, Bernadette; Guerret, Olivier; Magnet, Stephanie

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres, UMR 7610, associee au CNRS, Universite Pierre et Marie Curie, Paris, 75252, Fr.

SOURCE: Macromolecules (2003), 36(22), 8260-8267

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

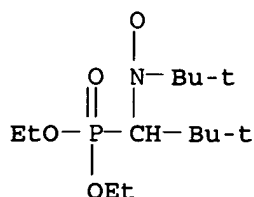
ED Entered STN: 03 Oct 2003

AB Controlled poly(acrylic acid) homopolymers were synthesized for the first time by direct nitroxide-mediated polymerization of acrylic acid. The polymns. were performed in 1,4-dioxane solution at 120 °C, using an alkoxyamine initiator based on the N-tert-butyl-N-(1-diethyl phosphono-2,2-dimethylpropyl) nitroxide, SG1. The kinetics were controlled by the addition of free nitroxide at the beginning of the polymerization and the optimal amount was 9 mol % with respect to the initiator. In this case, whatever the initiator concentration, all polymns. exhibited the same rate and conversion reached 85-90% within 5 h. Although the rate constant of propagation of acrylic acid is very large, its reactivity is moderated by a low activation-deactivation equilibrium constant between active macroradicals and SG1-capped dormant chains. Various alkoxyamine concns. were investigated to target different molar masses. At high initiator concns., the number-average molar mass, Mn, increased linearly with monomer conversion and followed the theor. values; the polydispersity indexes ranged between 1.3 and 1.5. At low initiator concentration (high target Mn), a deviation from linearity was observed in the Mn vs conversion plot and was clearly assigned to chain transfer to 1,4-dioxane. From these results, the best exptl. conditions to obtain well-defined homopolymers with the min. amount of dead chains were identified.

IT 188526-94-5, SG-1  
(nitroxide-mediated controlled free-radical polymerization of acrylic acid)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization

Polymerization catalysts

Polymerization kinetics

(radical; nitroxide-mediated controlled free-radical polymerization of acrylic acid)

IT 188526-94-5, SG-1

(nitroxide-mediated controlled free-radical polymerization of acrylic acid)

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 10 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:669626 HCAPLUS

DOCUMENT NUMBER: 140:321817

TITLE: Controlled radical polymerization in the presence of  $\beta$ -phosphonylated nitroxide - kinetics, mechanism, and macromolecular architecture

AUTHOR(S): Chevalier, Celine; Robin, Sophie; Benoit, Didier; Guerret, Oliver; Gnanou, Yves

CORPORATE SOURCE: Lab. de Chim. des Polymeres Org., CNRS-ENSCP-Univ. Bordeaux I, Pessac, 33607, Fr.

SOURCE: Polimery (Warsaw, Poland) (2003), 48(7/8), 499-504

CODEN: POLIA4; ISSN: 0032-2725

PUBLISHER: Instytut Chemii Przemyslowej

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 28 Aug 2003

AB Using N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (DEPN), controlled radical polymerization of styrene and Bu acrylate, could be achieved. The rate constant of reversible deactivation of growing radicals by DEPN and the rate of dissociation of the alkoxyamine formed were determined Miscellaneous macromol. architectures, including block copolymers,

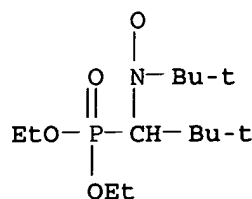
stars and star block copolymers, were derived by this chemical

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

(for controlled radical polymerization of Bu acrylate and styrene)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization

**Polymerization catalysts**

Polymerization kinetics

(living, radical; nitroxide mediated controlled radical polymerization of Bu acrylate and styrene)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

(for controlled radical polymerization of Bu acrylate and styrene)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 11 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:571501 HCAPLUS

DOCUMENT NUMBER: 139:338267

TITLE: Impact of dilution on the rate constant of termination <kt> in nitroxide-mediated polymerization

AUTHOR(S): Chevalier, Celine; Guerret, Olivier; Gnanou, Yves

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques, UMR CNRS-ENSCP-Universite Bordeaux I, Pessac, 33607, Fr.

SOURCE: ACS Symposium Series (2003), 854(Advances in Controlled/Living Radical Polymerization), 424-437  
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

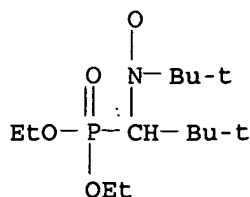
ED Entered STN: 27 Jul 2003

AB The variation of viscosity with conversion was determined for a series of five expts. carried out at 120 °C and different dilns. Styrene was the monomer chosen for this study and MONAMS, a monoalkoxyamine based on N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl (SG1), served as initiator. Unexpectedly, the rate constant of termination <kt> was found to vary with the initial dilution of the medium, but to remain unchanged with the viscosity build-up induced by monomer conversion.

IT 188526-94-5, SG1  
(impact of dilution on rate constant of termination in nitroxide-mediated radical polymerization)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization

Polymerization catalysts

Polymerization kinetics

(living, radical; impact of dilution on rate constant of termination in nitroxide-mediated radical polymerization)

IT 188526-94-5, SG1

(impact of dilution on rate constant of termination in nitroxide-mediated radical polymerization)

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 12 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:533012 HCAPLUS

DOCUMENT NUMBER: 139:231041

TITLE: Acrylamide-Based Amphiphilic Block Copolymers via Nitroxide-Mediated Radical Polymerization

AUTHOR(S): Schierholz, K.; Givehchi, M.; Fabre, P.; Nallet, F.; Papon, E.; Guerret, O.; Gnanou, Y.

CORPORATE SOURCE: Centre de Recherche Paul Pascal, Pessac, 33600, Fr.

SOURCE: Macromolecules (2003), 36(16), 5995-5999

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 13 Jul 2003

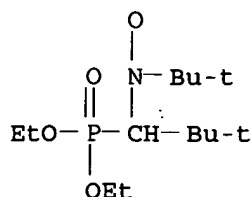
AB Nitroxide-mediated polymerization is shown to produce well-defined poly(N,N-dimethylacrylamide) samples. In the presence of SG1, a  $\beta$ -phosphonylated nitroxide, the free radical polymerization of N,N-dimethylacrylamide indeed exhibits a "living"/controlled character, provided the nitroxide is used in excess and its concentration finely tuned as compared to that the free radical initiator (AIBN). Poly(N,N-dimethylacrylamide-b-Bu acrylate) diblocks copolymers were subsequently derived by sequential polymerization of the two corresponding monomers.

IT 188526-94-5, SG 1

(acrylamide-based amphiphilic block copolymers via nitroxide-mediated radical polymerization)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(radical, macroinitiator; acrylamide-based amphiphilic block copolymers via nitroxide-mediated radical polymerization)

IT 78-67-1, AIBN 188526-94-5, SG 1

(acrylamide-based amphiphilic block copolymers via nitroxide-mediated radical polymerization)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 13 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:439080 HCAPLUS

DOCUMENT NUMBER: 140:181886

TITLE: Convenient synthesis of a surface-active alkoxyamine initiator from styrene oxide. Living/free-radical polymerization of styrene and n-butyl acrylate

AUTHOR(S): Beyou, Emmanuel; Humbert, Julien; Chaumont, Philippe

CORPORATE SOURCE: Laboratoire des Matériaux Polymères Biomatériaux, UMR CNRS n°5627, Batiment ISTIL, Université Claude Bernard - Lyon 1, Villeurbanne, 69622, Fr. e-Polymers (2003) No pp. given, Paper

SOURCE: No. 20  
CODEN: EPOLCI  
URL: [http://www.e-polymers.org/papers/beyou\\_170403.pdf](http://www.e-polymers.org/papers/beyou_170403.pdf)

PUBLISHER: European Polymer Federation

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

ED Entered STN: 10 Jun 2003

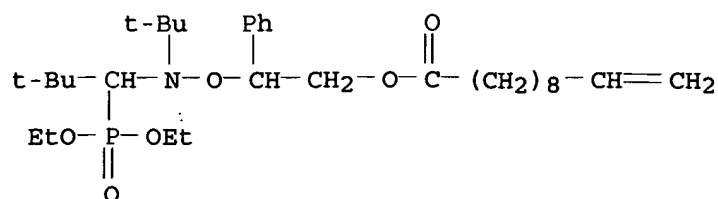
AB A novel alkoxyamine based on N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (DEPN) was designed with a functional group, which promotes the chemisorption of free silanols from Si surface and organic-inorg. hybrid materials by a sol-gel process. This alkoxyamine was synthesized in high yield from styrene oxide and was employed for the nitroxide-mediated polymerization of styrene and Bu acrylate. The resulting alkoxyamine-containing homo- and copolymer precursors have narrow mol. weight distributions.

IT 658687-18-4P

(reaction with triethoxysilane; triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

RN 658687-18-4 HCAPLUS

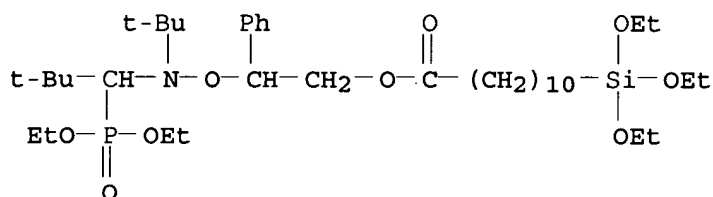
CN 10-Undecenoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphanon-1-yl ester (9CI) (CA INDEX NAME)



IT 623548-68-5P

(triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

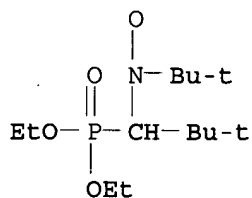
RN 623548-68-5 HCAPLUS

CN Undecanoic acid, 11-(triethoxysilyl)-, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphanon-1-yl ester (9CI)  
(CA INDEX NAME)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

(triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)

CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization

Polymerization catalysts

Polymerization kinetics

(living, radical; triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

IT 658687-18-4P

(reaction with triethoxysilane; triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

IT 623548-68-5P

(triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

IT 998-30-1, Triethoxysilane 64239-88-9, Undecenyl chloride



188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

(triethoxysilane ended alkoxyamine initiator for living/free-radical polymerization of styrene and Bu acrylate)

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 14 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:301111 HCAPLUS

DOCUMENT NUMBER: 138:321747

TITLE: Controlled copolymerization processes in the presence of monomer-containing complexes

INVENTOR(S): Matyjaszewski, Krzysztof; Kirci, Betul; Lutz, Jean-Francois; Pintauer, Tomislav

PATENT ASSIGNEE(S): Carnegie Mellon University, USA

SOURCE: PCT Int. Appl., 69 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003031480	A2	20030417	WO 2002-US32526	20021011
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WO 2003031480	A3	20031113		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002351471	A1	20030422	AU 2002-351471	20021011
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US 2003139553	A1	20030724	US 2002-269556	20021011
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US 7064166	B2	20060620		
PRIORITY APPLN. INFO.:				
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			WO 2002-US32526	W 20021011
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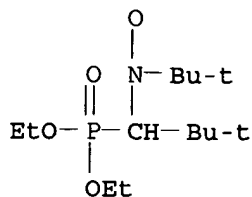
ED Entered STN: 18 Apr 2003

AB A polymerization process comprises polymerizing first monomers and second monomers

under controlled polymerization conditions in the presence of a complex comprising at least one of the monomers. The presence of the complex modifies the relative reactivity, or cross propagation rate consts., of the monomers in copolymn. reactions. The method provides polymers with novel stereochem. and monomer sequence distribution, controlled mol. weight and narrow mol. weight distribution. Thus, a complex comprising Me methacrylate (1.86) and diethylaluminum chloride (0.89) was prepared and used in RAFT copolymn. of styrene (1.93 g) and Me methacrylate, the polymerization being carried out at 60° in the presence of AIBN and cumyl dithiobenzoate. Well-defined alternating Me

methacrylate-styrene copolymer of controlled mol. weight (20,000 g/mol), low polydispersity ( $M_w/M_n = 1.38$ ) and controlled comonomer sequences (86.8% of alternating triads) was produced.

IT 188526-94-5, SG 1  
(controlled copolymn. processes in presence of monomer-containing complexes)  
RN 188526-94-5 HCAPLUS  
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



IC ICM C08F004-00  
CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 29, 67  
IT Chain transfer agents  
Polymerization  
**Polymerization catalysts**  
(controlled copolymn. processes in presence of monomer-containing complexes)

IT 75-47-8, Iodoform 78-67-1, AIBN 96-10-6D, Diethylaluminum chloride, complexes with acrylates 624-75-9, Iodoacetonitrile 2564-83-2, TEMPO 12075-68-2D, Ethylaluminum sesquichloride, complexes with acrylates 188526-94-5, SG 1 201611-77-0, Cumyl dithiobenzoate  
(controlled copolymn. processes in presence of monomer-containing complexes)

L35 ANSWER 15 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:222776 HCAPLUS

DOCUMENT NUMBER: 138:385804

TITLE: In situ FTIR monitoring of alkyl acrylate stable free radical polymerizations

AUTHOR(S): Lizotte, Jeremy R.; Long, Timothy E.

CORPORATE SOURCE: Department of Chemistry and the Center for Adhesive and Sealant Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, 24061-0212, USA

SOURCE: PMSE Preprints (2003), 88, 471-472

CODEN: PPMRA9; ISSN: 1550-6703

PUBLISHER: American Chemical Society

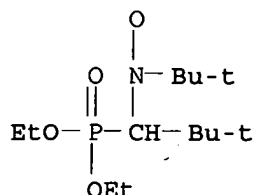
DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

ED Entered STN: 23 Mar 2003

AB The focus of this presentation is to demonstrate the utility of in situ FTIR spectroscopy in the investigation of the SFRP of alkyl acrylates. In addition, the synthesis of a previously described nitroxide mediator, N-tert-butyl-N-[1-diethylphosphono(2,2-dimethylpropyl)]nitroxide (DEPN), is studied using FTIR. The homopolymn. kinetics were investigated to elucidate the effect of alkyl ester chain length on polymerization rate. Also, the copolymn. of multiple acrylate monomers was examined with an emphasis on hydroxyethyl

acrylate copolymns. for the preparation of adhesive compns.  
 IT 188526-94-5P, N-tert-Butyl-[1-diethylphosphono(2,2-dimethylpropyl)]nitroxide  
 (preparation of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymns.)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)

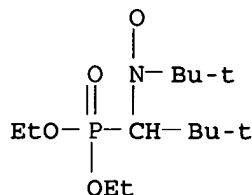


CC 35-3 (Chemistry of Synthetic High Polymers)  
 IT Polymerization  
 Polymerization catalysts  
 Polymerization kinetics  
 (radical; preparation of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymns.)  
 IT 188526-94-5P, N-tert-Butyl-[1-diethylphosphono(2,2-dimethylpropyl)]nitroxide  
 (preparation of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymns.)  
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 16 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:222695 HCAPLUS  
 DOCUMENT NUMBER: 138:385801  
 TITLE: Automatic continuous online monitoring of polymerization reactions (ACOMP) adapted to high viscosity reactions  
 AUTHOR(S): Mignard, Emmanuel; Guerret, Olivier; Bertin, Denis; Reed, Wayne F.  
 CORPORATE SOURCE: Physics Department, Tulane University, New Orleans, LA, 70118, USA  
 SOURCE: PMSE Preprints (2003), 88, 314-316  
 CODEN: PPMRA9; ISSN: 1550-6703  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal; (computer optical disk)  
 LANGUAGE: English  
 ED Entered STN: 23 Mar 2003  
 AB ACOMP was adapted to following polymerization reactions that reach high viscosity; tens of thousands of centipoise. This required introduction of either peristaltic or gear pumps, in addition to the HPLC pumps previously used. Expanding ACOMP to high viscosities considerably broadens the range of the technique. Its use is illustrated here to follow bulk polystyrene reactions. The initiator used, ter-amylperoxy 2-ethylhexylcarbonate, had a lifetime less than the period for total monomer conversion, leading to a 'dead-end' reaction, in which a finite amount of monomer remained after the initiator was exhausted. The kinetics and mol. mass evolution revealed by ACOMP quant. follow the predictions of the quasi-steady

state approximation in the limit of short initiator lifetime. Addnl., high viscosity ACOMP was extended to nitroxide mediated homo- and copolymn. reactions using N-tertiobutyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (SG1).

IT 188526-94-5, SG1  
(automatic continuous online monitoring of polymerization reactions (ACOMP) adapted to high viscosity reactions)  
RN 188526-94-5 HCAPLUS  
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 36  
IT Polymerization  
Polymerization catalysts  
(radical; automatic continuous online monitoring of polymerization reactions (ACOMP) adapted to high viscosity reactions)  
IT 70833-40-8, Tert-Amyl peroxy 2-ethylhexyl carbonate  
188526-94-5, SG1  
(automatic continuous online monitoring of polymerization reactions (ACOMP) adapted to high viscosity reactions)  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

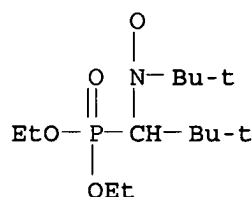
L35 ANSWER 17 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2003:188381 HCAPLUS  
DOCUMENT NUMBER: 138:354320  
TITLE: Controlled Polymerization of Functional Monomers and Synthesis of Block Copolymers Using a  $\beta$ -Phosphonylated Nitroxide  
AUTHOR(S): Diaz, T.; Fischer, A.; Jonquieres, A.; Brembilla, A.; Lochon, P.  
CORPORATE SOURCE: Equipe de Chimie Physique Organique et Colloiedale Unite Mixte de Recherche CNRS-UHP 7565, Universite Henri Poincare-Nancy 1, Vandoeuvre-les-Nancy, 239-54506, Fr.  
SOURCE: Macromolecules (2003), 36(7), 2235-2241  
CODEN: MAMOBX; ISSN: 0024-9297  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
ED Entered STN: 11 Mar 2003  
AB 4-Vinylpyridine (4VP) and N,N-dimethylacrylamide (DMAA) were polymerized in a controlled manner using a  $\beta$ -phosphonylated nitroxide (N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide, commonly designated as DEPN) as a control agent. Compared to the results that had previously been reported for the nitroxide-mediated radical polymerization (NMRP) with 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), the polymerization of 4VP was much faster and very well controlled

up to higher monomer conversions. Unlike 4VP, the controlled radical polymerization of DMAA using different types of nitroxides had so far remained limited to a very low conversion range (typically inferior to 10%). The use of DEPN gave rise to a very significant improvement of the NMRP of DMAA by providing a good reaction control up to high conversion (approx. 60%). For the first time, the ability of DEPN to control the homopolymn. of DMAA even at high conversion allowed the synthesis of poly(DMAA-b-4VP) block copolymers with a hydrophilic poly(DMAA) block which was longer than the poly(4VP) block. This particular feature should fairly improve the hydro-solubility of the derived amphiphilic cationic polymers, which can be obtained by simple quaternization of the former block copolymers, and extend the scope of their applications.

IT 188526-94-5P, N-tert-Butyl-(1-diethylphosphono-2,2-dimethylpropyl)Nitroxide  
(controlled polymerization of functional monomers and synthesis of block copolymers using a  $\beta$ -phosphonylated nitroxide)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts  
(radical; controlled polymerization of functional monomers and synthesis of block copolymers using a  $\beta$ -phosphonylated nitroxide)

IT 188526-94-5P, N-tert-Butyl-(1-diethylphosphono-2,2-dimethylpropyl)Nitroxide  
(controlled polymerization of functional monomers and synthesis of block copolymers using a  $\beta$ -phosphonylated nitroxide)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 18 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:868644 HCAPLUS

DOCUMENT NUMBER: 138:137668

TITLE: Formation of polyacrylate brushes on silica surfaces

AUTHOR(S): Parvole, J.; Billon, L.; Montfort, J. P.

CORPORATE SOURCE: Laboratoire de Physico-Chimie des Polymeres, UMR 5067, Pau, 64053, Fr.

SOURCE: Polymer International (2002), 51(10), 1111-1116  
CODEN: PLYIEI; ISSN: 0959-8103

PUBLISHER: John Wiley & Sons Ltd.

DOCUMENT TYPE: Journal

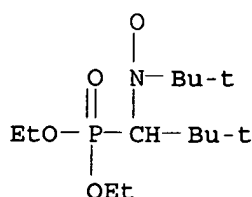
LANGUAGE: English

ED Entered STN: 15 Nov 2002

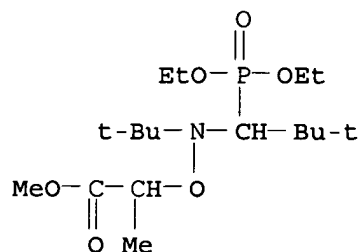
AB The formation of polyacrylate (molten state polymers; Tg <23°) monolayers attached onto SiO2 surfaces using covalently bonded

initiators for radical-chain polymerization is reported. In a first reaction step, the initiator is self-assembled on the surface. In a subsequent reaction, the initiator is activated and the polymer formed in situ at the surface of the substrate with high surface grafting d. Also, the use of a living free-radical process permits the mol. weight and polydispersity of the polymer chains to be controlled, and the polymer monolayer thickness also. The polymers have been qual. characterized by x-ray spectroscopy (XPS) and Fourier transformed IR (FTIR) measurements.

IT 188526-94-5 300811-93-2  
(promoter; polyacrylate brushes grafted on silica surfaces)  
RN 188526-94-5 HCAPLUS  
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



RN 300811-93-2 HCAPLUS  
CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
ST polyacrylate surface grafting silica; acrylate living free radical  
polymn initiator

IT 188526-94-5 300811-93-2  
(promoter; polyacrylate brushes grafted on silica surfaces)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 19 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:778007 HCAPLUS

DOCUMENT NUMBER: 137:295361

TITLE: Polymerization in aqueous suspension of vinyl  
chloride

INVENTOR(S): Bonardi, Christian; Couturier, Jean-Luc; Grimaldi,  
Sandra; Guerret, Olivier; Kervennal, Jacques;  
Hebrard, Pierre; Taha, Bouchra

PATENT ASSIGNEE(S): ATOFINA, Fr.

SOURCE: PCT Int. Appl., 23 pp.

DOCUMENT TYPE: CODEN: PIXXD2  
 LANGUAGE: Patent  
 FAMILY ACC. NUM. COUNT: French  
 PATENT INFORMATION: 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002079279	A1	20021010	WO 2002-FR1094	20020328
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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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FR 2822832	B1	20050114		
CA 2441807	A1	20021010	CA 2002-2441807	20020328
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AU 2002257855	A1	20021015	AU 2002-257855	20020328
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AU 2002257855	B2	20041028		
EP 1383809	A1	20040128	EP 2002-727647	20020328
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EP 1383809	B1	20050706		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
BR 2002007637	A	20040302	BR 2002-7637	20020328
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HU 200304089	A2	20040428	HU 2003-4089	20020328
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CN 1501945	A	20040602	CN 2002-807882	20020328
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JP 2004534867	T	20041118	JP 2002-577902	20020328
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JP 3831807	B2	20061011		
AT 299155	T	20050715	AT 2002-727647	20020328
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PT 1383809	T	20051031	PT 2002-727647	20020328
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ES 2243723	T3	20051201	ES 2002-2727647	20020328
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TW 242017	B	20051021	TW 2002-91106630	20020402
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IN 2003DN01470	A	20050603	IN 2003-DN1470	20030915
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NO 2003004354	A	20030929	NO 2003-4354	20030929
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MX 2003PA08986	A	20040318	MX 2003-PA8986	20031001
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US 2004132930	A1	20040708	US 2003-473891	20031002
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PRIORITY APPLN. INFO.:			FR 2001-4425	A 20010402
<--				

WO 2002-FR1094

W 20020328

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OTHER SOURCE(S): MARPAT 137:295361

ED Entered STN: 11 Oct 2002

AB The invention concerns a method for polymerization in aqueous suspension of vinyl

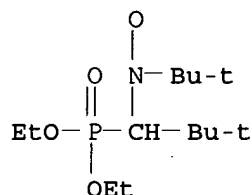
chloride alone or mixed with another vinyl monomer, wherein the initiator comprises  $\geq 1$  compound selected among dialkyl peroxydicarbonates, peroxy-tert-alkanoates and diacyl peroxides, and it consists in using, as terminator of polymerization, a stable nitroxyl radical. The resulting resins have good whiteness.

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

(radical polymerization in aqueous suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



IC ICM C08F014-06

ICS C08F002-18; C08F002-38

CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts****Polymerization inhibitors**

(radical polymerization in aqueous suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

IT 105-74-8, Dilauroyl peroxide 2226-96-2, 4-Hydroxy-TEMPO  
26748-41-4, Luperox 10M75 95718-78-8, 1,1-Dimethyl-3-hydroxybutyl  
peroxyneodecanoate 188526-94-5, N-tert-Butyl-1-

diethylphosphono-2,2-dimethylpropyl nitroxide

(radical polymerization in aqueous suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 20 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:717702 HCAPLUS

DOCUMENT NUMBER: 138:24988

TITLE: Decomposition of model alkoxyamines in simple and  
polymerizing systems. II. Diastereomeric  
N-(2-methylpropyl)-N-(1-diethyl-phosphono-2,2-  
dimethyl-propyl)-aminoxyl-based compounds

AUTHOR(S): Ananchenko, Gennady S.; Souaille, Marc; Fischer,  
Hanns; Le Mercier, Christophe; Tordo, Paul

CORPORATE SOURCE: Physikalisches-Chemisches Institut, Universitat  
Zurich, Zurich, CH 8057, Switz.



SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2002), 40(19), 3264-3283  
 CODEN: JPACEC; ISSN: 0887-624X  
 PUBLISHER: John Wiley & Sons, Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 22 Sep 2002

AB Thermal reactions of the alkoxyamine diastereomers DEPN-R' [DEPN: N-(2-methylpropyl)-N-(1-diethylphosphono-2,2-dimethyl-propyl)-aminoxyl; R': methoxy-carbonylethyl and phenylethyl] with (R,R) + (S,S) and (R,S) + (S,R) configurations have been investigated by <sup>1</sup>H NMR at 100°. During the overall decay the diastereomers interconvert, and an anal. treatment of the combined processes is presented. Rate consts. are obtained for the cleavage and reformation of DEPN-R' from NMR, ESR, and chemical induced dynamic nuclear polarization expts. also using 2,2,6,6-tetramethylpiperidinyl-1-oxyl (TEMPO) as a radical scavenger. The rate consts. depend on the diastereomer configuration and the residues R'. Simulations of the kinetics observed with styrene and Me methacrylate containing solns. yielded rate consts. for unimeric and polymeric alkoxyamines DEPN-(M)n-R'. The results were compatible with the known DEPN mediation of living styrene and acrylate polymns. For Me methacrylate the equilibrium constant of the reversible cleavage of the dormant chains DEPN-(M)n-R' is very large and renders successful living polymns. unlikely. Mechanistic and kinetic differences of DEPN- and TEMPO-mediated polymns. are discussed.

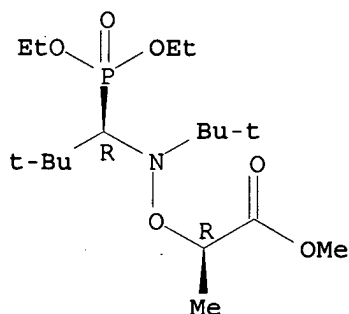
IT 478185-81-8 478185-82-9 478185-83-0  
 478185-84-1 478185-85-2 478185-86-3  
 478185-87-4 478185-88-5

(decomposition of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymerizing systems)

RN 478185-81-8 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5R)- (9CI) (CA INDEX NAME)

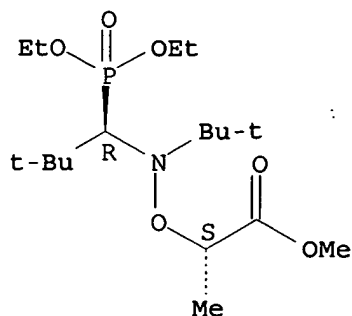
Absolute stereochemistry.



RN 478185-82-9 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2S,5R)- (9CI) (CA INDEX NAME)

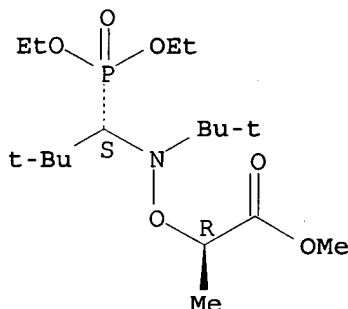
Absolute stereochemistry.



RN 478185-83-0 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5S)- (9CI) (CA INDEX NAME)

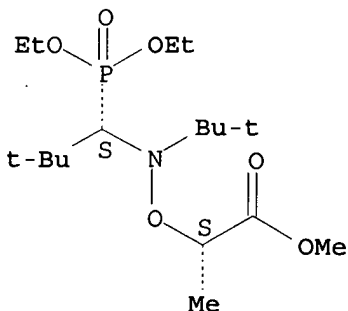
Absolute stereochemistry.



RN 478185-84-1 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2S,5S)- (9CI) (CA INDEX NAME)

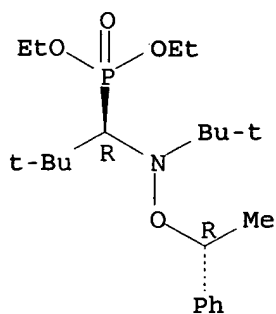
Absolute stereochemistry.



RN 478185-85-2 HCAPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

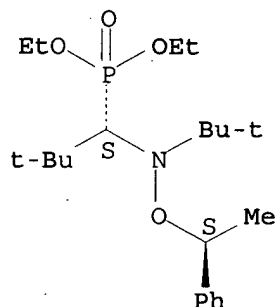
Absolute stereochemistry.



RN 478185-86-3 HCAPLUS

CN Phosphonic acid, [(1S)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

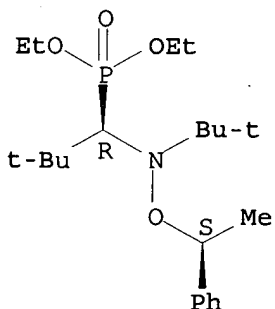
Absolute stereochemistry.



RN 478185-87-4 HCAPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

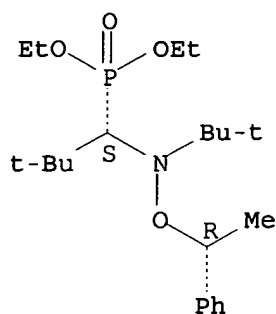
Absolute stereochemistry.



RN 478185-88-5 HCAPLUS

CN Phosphonic acid, [(1S)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST alkoxyamine diastereomer decompn living radical polymn  
 initiator kinetics NMR  
 IT Polymerization catalysts  
 Polymerization kinetics  
 (living, radical; decomposition of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymerizing systems)  
 IT 478185-81-8 478185-82-9 478185-83-0  
 478185-84-1 478185-85-2 478185-86-3  
 478185-87-4 478185-88-5  
 (decomposition of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymerizing systems)

REFERENCE COUNT: 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 21 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:709890 HCAPLUS  
 DOCUMENT NUMBER: 137:353388  
 TITLE: Controlled/Living Radical Polymerization of tert-Butyl Acrylate Mediated by Chiral Nitroxides. A Stereochemical Study  
 AUTHOR(S): Ananchenko, Gennady; Matyjaszewski, Krzysztof  
 CORPORATE SOURCE: Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, 15213, USA  
 SOURCE: Macromolecules (2002), 35(22), 8323-8329  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 19 Sep 2002

AB The two diastereomeric alkoxyamines of tBP-DEPN, where tBP is 1-(tert-butoxycarbonyl)ethyl and DEPN is N-(2-methylpropyl)-N-(1-diethylphosphophono-2,2-dimethylpropyl)aminoxyl, have marked differences in their thermodyn. stability (ratio of diastereomers is 5:1 at 100° in o-dichlorobenzene). They were used as initiators for the controlled/living radical polymerization of tert-Bu acrylate to test the premise that such moderators could potentially affect the tacticity of the resulting poly(tert-Bu acrylate). 2D NMR was used to analyze the end group configuration for the samples with shorter chain lengths (DP = 15-20). Although the diastereomeric excess in the polymer alkoxyamine end group is even higher than for the model compound (ratio of diastereomers is 7:1), the distribution of terminal triads in poly(tert-Bu acrylate) does not differ from those

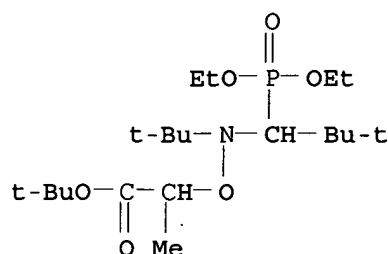
in the entire chain and is identical to that of the polymers prepared by ATRP (atom transfer radical polymerization). Thus, the tacticities of the poly(tert-Bu acrylate)s prepared by DEPN-mediated polymerization, ATRP, and conventional free radical polymerization were the same.

IT 474832-43-4P 474832-44-5P

(initiator; preparation of chiral nitroxide initiators and stereochem. study on controlled/living radical polymerization of tert-Bu acrylate mediated by chiral nitroxides)

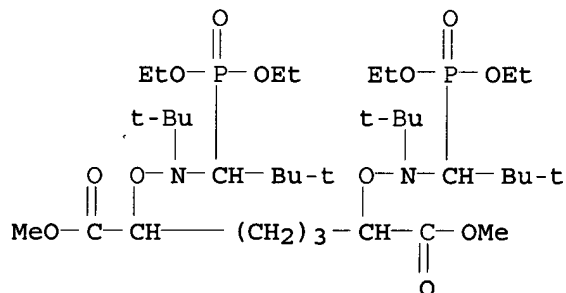
RN 474832-43-4 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,1-dimethylethyl ester, 6-oxide (9CI) (CA INDEX NAME)



RN 474832-44-5 HCAPLUS

CN Heptanedioic acid, 2,6-bis[[[1-(diethoxyphosphinyl)-2,2-dimethylpropyl] (1,1-dimethylethyl)amino]oxy]-, dimethyl ester (9CI) (CA INDEX NAME)

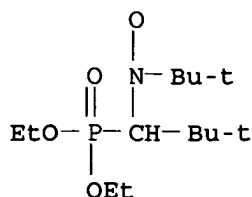


IT 188526-94-5

(starting material; preparation of chiral nitroxide initiators and stereochem. study on controlled/living radical polymerization of tert-Bu acrylate mediated by chiral nitroxides)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization

**Polymerization catalysts**

(living, radical; preparation of chiral nitroxide initiators and stereochem. study on controlled/living radical polymerization of tert-Bu acrylate mediated by chiral nitroxides)

IT 474832-43-4P 474832-44-5P

(initiator; preparation of chiral nitroxide initiators and stereochem. study on controlled/living radical polymerization of tert-Bu acrylate mediated by chiral nitroxides)

IT 868-73-5 39149-80-9, tert-Butyl 2-bromopropionate

188526-94-5

(starting material; preparation of chiral nitroxide initiators and stereochem. study on controlled/living radical polymerization of tert-Bu acrylate mediated by chiral nitroxides)

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 22 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:647922 HCAPLUS

DOCUMENT NUMBER: 138:171878

TITLE: Acrylic coatings produced with controlled radical polymerization techniques

AUTHOR(S): Callais, Peter; Moskal, Michael; Pichai, Puvin; Guerret, Olivier; Charleux, Bernadette

CORPORATE SOURCE: ATOFINA Chemicals Organic Peroxides R&D, King of Prussia, PA, 19406, USA

SOURCE: Proceedings of the International Waterborne, High-Solids, and Powder Coatings Symposium (2002), 29th, 197-210

CODEN: PIWCF4

PUBLISHER: University of Southern Mississippi, Dep. of Polymer Science

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 28 Aug 2002

AB Free radical polymns. account for more than 50% of the world's polymer production. It is difficult to control these polymns. and synthesize tailored mols. with specific architecture and properties. Several techniques have been researched to develop ways to control free radical polymns. and terms like controlled radical polymerization (CRP) or "living" free radical polymns. have been used to describe the process. The key aspect in CRP is its ability to eliminate the termination of growing free radical chains. This facilitates the synthesis of polymers with low polydispersity, as well as co- and multi-block copolymers. This technol. also allows well-defined polymer modification and grafting. We have developed a family of nitroxide derivs. that can be applied to a wide range of free radical polymns. to perform controlled radical polymer synthesis. This paper will

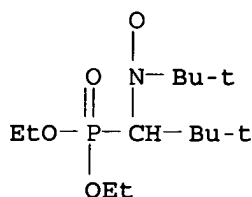
examine the use of two nitroxide compds., namely SG-1 and MONAMS, to synthesize acrylic high solids coating resins with low polydispersity. We will also discuss the production of block copolymers using these nitroxide in a mini-emulsion process. The chemical, synthesis techniques, and properties of these coating resins will be discussed.

IT 188526-94-5 300811-93-2

(polymerization catalyst; acrylic coatings produced with controlled radical polymerization)

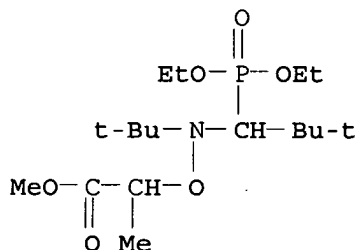
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 42-7 (Coatings, Inks, and Related Products)

Section cross-reference(s): 35

IT **Polymerization catalysts**

(living, radical; acrylic coatings produced with controlled radical polymerization)

IT 870-98-4, tert.-Amyl peroctoate 188526-94-5

300811-93-2

(polymerization catalyst; acrylic coatings produced with controlled radical polymerization)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 23 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:626641 HCAPLUS

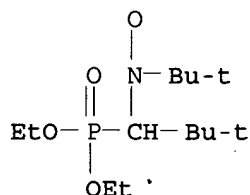
DOCUMENT NUMBER: 137:338197

TITLE: Effect of chain transfer to polymer in nitroxide-mediated controlled free-radical polymerization of n-butyl acrylate

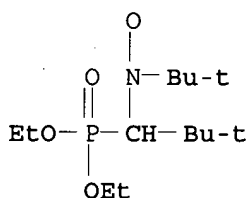
AUTHOR(S): Farcet, Celine; Belleney, Joel; Charleux, Bernadette

CORPORATE SOURCE: Lab. Chimie Macromoleculaire, UMR 7610, Univ.

SOURCE: Pierre et Marie Curie, Paris, 75252, Fr.  
 Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (2002),  
 43(2), 299-300  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry  
 DOCUMENT TYPE: Journal; (computer optical disk)  
 LANGUAGE: English  
 ED Entered STN: 20 Aug 2002  
 AB Poly(Bu acrylate) with well defined architectures could be prepared in  
 miniemulsion and in bulk when the radical polymerization was mediated by  
 N-tert-butyl-N-[1-(di-Et phosphono)-2,2-dimethylpropyl]nitroxide.  
 IT 188526-94-5 188526-94-5D, reaction products with Me  
 acrylate  
 (nitroxide-mediated controlled radical polymerization of Bu acrylate)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 IT **Polymerization catalysts**  
 (radical; nitroxide-mediated controlled radical polymerization of Bu  
 acrylate)  
 IT 96-33-3D, Methyl acrylate, reaction products with N-tert-Butyl-N-[1-  
 (di-Et phosphono)-2,2-dimethylpropyl]nitroxide 188526-94-5  
 188526-94-5D, reaction products with Me acrylate  
 (nitroxide-mediated controlled radical polymerization of Bu acrylate)  
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 24 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:626624 HCAPLUS  
 DOCUMENT NUMBER: 137:338266  
 TITLE: Synthesis of fluorinated block copolymers by



nitroxide-mediated radical polymerization for supercritical carbon dioxide applications

AUTHOR(S): Lacroix-Desmazes, Patrick; Boutevin, Bernard; Taylor, Darlene K.; DeSimone, Joseph M.

CORPORATE SOURCE: Lab. Chimie Macromoleculaire, UMR-CNRS 5076, Ecole Nationale Supérieure Chimie Montpellier, Montpellier, 34296, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 285-286  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

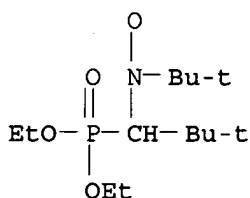
ED Entered STN: 20 Aug 2002

AB Well-defined side-chain liquid-crystalline fluorinated block copolymers poly(styrene)-b-poly(perfluorooctyl-ethylenoxymethylstyrene) (PS-b-PFDS) and poly(styrene)-b-poly(1,1,2,2-tetrahydroperfluorodecyl acrylate) (PS-b-PFDA) were successfully synthesized by nitroxide-mediated radical polymerization. The living nature of the polymerization was confirmed by size exclusion chromatog. and proton NMR analyses in  $\alpha,\alpha,\alpha$ -trifluorotoluene. The fluorinated CO<sub>2</sub>-philic block, if large enough, imparts solubility to the diblock copolymers in liquid and supercrit. carbon dioxide, making them useful as macromol. surfactants in this environmentally benign medium.

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide  
(preparation of fluorinated block copolymers by nitroxide-mediated radical polymerization for supercrit. carbon dioxide applications)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

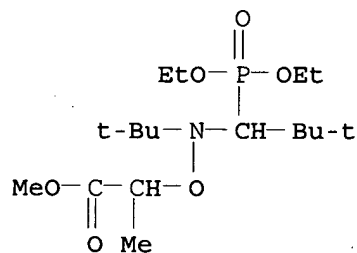
IT **Polymerization catalysts**  
(radical; preparation of fluorinated block copolymers by nitroxide-mediated radical polymerization for supercrit. carbon dioxide applications)

IT 2564-83-2, TEMPO 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide  
(preparation of fluorinated block copolymers by nitroxide-mediated radical polymerization for supercrit. carbon dioxide applications)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 25 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2002:626589 HCAPLUS

DOCUMENT NUMBER: 137:338364  
 TITLE: Coupling of  $\omega$ -alkoxyamine polymers with the aid of  $\alpha$ -methylstyrene  
 AUTHOR(S): Chevalier, C.; Guerret, O.; Gnanou, Y.  
 CORPORATE SOURCE: Lab. Chimie Polymeres Organiques, UMR 5629, ENSCPB-CNRS Univ. Bordeaux 1, Pessac, 33607, Fr.  
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 253-254  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry  
 DOCUMENT TYPE: Journal; (computer optical disk)  
 LANGUAGE: English  
 ED Entered STN: 20 Aug 2002  
 AB This contribution presented preliminary results concerning the coupling/dimerization of  $\omega$ -alkoxyamine-polymers in the presence of  $\alpha$ -Me styrene. It was found for  $\omega$ -alkoxyamine-polystyrene that the coupling/dimerization of these chains could reach efficiency values as high as 0.9 when heating them in neat  $\alpha$ -Me styrene, above the ceiling temperature of this  $\alpha$ -substituted monomer.  
 IT 300811-93-2  
 (initiator; coupling of  $\omega$ -alkoxyamine polymers with the aid of  $\alpha$ -methylstyrene)  
 RN 300811-93-2 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)  
 IT Coupling reaction  
 Dimerization  
**Polymerization catalysts**  
 (coupling of  $\omega$ -alkoxyamine polymers with the aid of  $\alpha$ -methylstyrene)  
 IT 300811-93-2  
 (initiator; coupling of  $\omega$ -alkoxyamine polymers with the aid of  $\alpha$ -methylstyrene)  
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 26 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:624979 HCAPLUS  
 DOCUMENT NUMBER: 137:353473  
 TITLE: Role of nitroxides in the elaboration of new organic materials  
 AUTHOR(S): Chauvin, F.; Gigmes, D.; Marque, S.; Bertin, D.; Tordo, P.; Guerret, O.

CORPORATE SOURCE: UMR 6517 case 521, CNRS, Univ. Aix-marseille, Marseille, 13397, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 108-109  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

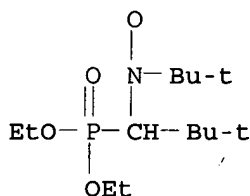
ED Entered STN: 20 Aug 2002

AB Nitroxides are one of the most efficient and universal controllers of radical reaction involved in synthesis of organic materials. These stable free radicals allow to increase physico-chemical properties of various polymers from commodity polymers to nanostructured materials. One of the advantages is the capacity of using such mols. during the processing of polymers in extruders. Different nitroxides were used as polymerization catalysts and polymer degradation catalysts.

IT 188526-94-5 300811-93-2  
(nitroxides used as universal controllers of radical reaction including polymerization catalysts and polymer degradation catalysts)

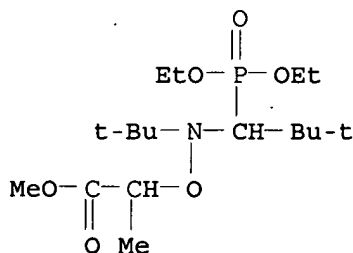
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)

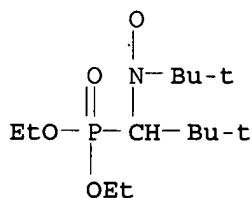
IT Impact strength  
Polymerization catalysts  
(nitroxides used as universal controllers of radical reaction including polymerization catalysts and polymer degradation catalysts)

IT 2564-83-2, TEMPO 188526-94-5 300811-93-2  
(nitroxides used as universal controllers of radical reaction including polymerization catalysts and polymer degradation catalysts)

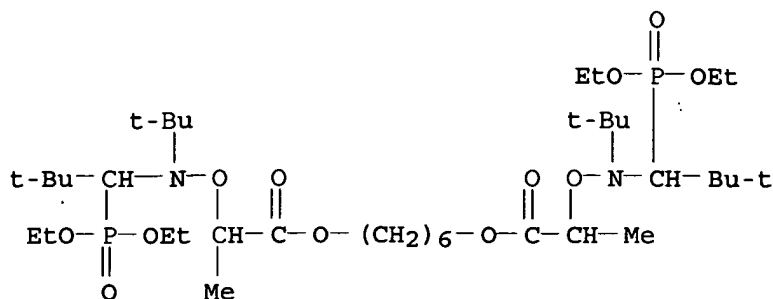
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 27 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:624966 HCAPLUS  
 DOCUMENT NUMBER: 137:353359  
 TITLE: Use of a difunctional alkoxyamine initiator in the  
 miniemulsion polymerization of n-butyl acrylate  
 AUTHOR(S): Farcet, Celine; Charleux, Bernadette; Pirri,  
 Rosangela; Guerret, Olivier  
 CORPORATE SOURCE: Lab. Chimie Macromoleculaire, UMR 760, Univ.  
 Pierre et Marie Curie, Paris, 75252, Fr.  
 SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (2002),  
 43(2), 98-99  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry  
 DOCUMENT TYPE: Journal; (computer optical disk)  
 LANGUAGE: English  
 ED Entered STN: 20 Aug 2002  
 AB The application of controlled free-radical polymerization to aqueous dispersed  
 systems offers the opportunity to directly prepare well-defined  
 copolymers in a latex form. In the presented work a SG1-based  
 difunctional alkoxyamine was used as an initiator for the homopolymn.  
 of Bu acrylate in aqueous miniemulsion, first to increase the achievable  
 molar mass and second, to use the polymer as a difunctional  
 macroinitiator for the synthesis of triblock copolymers in aqueous  
 dispersed systems. Well-defined polymers with one alkoxyamine  
 functionality at each end were obtained, providing that monomer  
 conversion was kept below 70%. Beyond this conversion, extensive  
 broadening of the molar mass distribution was evidenced, as the  
 consequence of termination and transfer to polymer. These  
 $\alpha,\omega$ -difunctional homopolymers were used as precursors for  
 the synthesis of triblock copolymers.  
 IT 188526-94-5  
 (cocatalyst; difunctional alkoxyamine initiator in miniemulsion  
 polymerization of Bu acrylate)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



IT 300811-94-3  
 (difunctional alkoxyamine initiator in miniemulsion polymerization of Bu  
 acrylate)  
 RN 300811-94-3 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX  
 NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(difunctional alkoxyamine initiator in miniemulsion polymerization of Bu acrylate)

IT **188526-94-5**

(cocatalyst; difunctional alkoxyamine initiator in miniemulsion polymerization of Bu acrylate)

IT **300811-94-3**

(difunctional alkoxyamine initiator in miniemulsion polymerization of Bu acrylate)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 28 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:624944 HCAPLUS

DOCUMENT NUMBER: 137:353356

TITLE: Low molecular weight alkoxyamines: models to predict the fate of nitroxide mediated polymerizations

AUTHOR(S): Chauvin, F.; Gigmes, D.; Marque, S.; Bertin, D.; Tordo, P.

CORPORATE SOURCE: UMR 6517 case 521, Univ. Provence, Marseille, 13397, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 80-81

PUBLISHER: CODEN: ACPPAY; ISSN: 0032-3934 American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

ED Entered STN: 20 Aug 2002

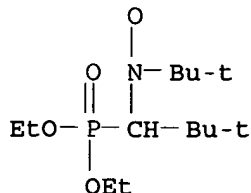
AB A new stable nitroxide, the N-(2-methylpropyl)-N-(1-diethylphosphono-2,2,-dimethylpropyl)-N-oxyl (so-called SG1) was developed, which revealed to be a potent family for nitroxide-mediated polymerization Using alkoxyamines 1 and 2 as models, the effects of the chain length and the viscosity of the solvent on the values of the rate constant Kd were studied. Kd of 2 does not depend on viscosity of the medium. The effect of the polystyryl chain length on kd for SG1-polystyryl alkoxyamines is weak or even negligible. Kd values of the model alkoxyamines should properly approx. the kd values of dormant species in polymerizing system.

IT **188526-94-5D**, reaction products with polystyrene

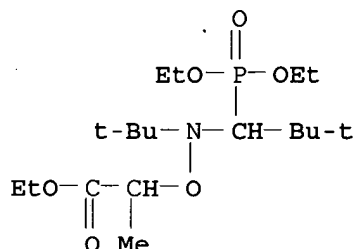
**474429-72-6**

(models to predict the fate of nitroxide mediated polymerization of

styrene)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



RN 474429-72-6 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, ethyl ester, 6-oxide (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST alkoxyamine **polymn** initiator chain length  
 viscosity rate const  
 IT 9003-53-6D, Polystyrene, reaction products with nitroxides  
 188526-94-5D, reaction products with polystyrene  
 474429-72-6  
 (models to predict the fate of nitroxide mediated polymerization of  
 styrene)

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 29 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:597366 HCAPLUS

DOCUMENT NUMBER: 138:155056

TITLE: Coatings by controlled radical polymerization

AUTHOR(S): Callais, Peter; Guerret, Olivier

CORPORATE SOURCE: USA

SOURCE: European Coatings Journal (2002), (7-8),  
 16, 18, 21-22, 24-25

CODEN: ECJOEF; ISSN: 0930-3847

PUBLISHER: Vincentz Verlag

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 12 Aug 2002

AB Several techniques have been researched to develop ways to control  
 free radical polymns. and terms like "Controlled Radical Polymerization"  
 (CRP) or "living" free radical polymns. have been used to describe the  
 process. The key aspect in CRP is its ability to eliminate the

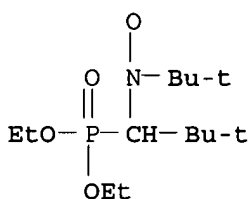
termination of growing free radical chains. This facilitates the synthesis of polymers with low polydispersities, as well as co- and multi-block copolymers. This technol. also allows well-defined polymer modification and grafting. Now, there is a family of nitroxide derivs. that can be applied to a wide range of free radical polymns. to perform controlled radical polymer synthesis. This paper will examine the use of two nitroxide compds., namely SG-1 and Monams, to synthesize acrylic High Solids Coating (HSC) resins with low polydispersities.

IT 188526-94-5D, alkoxyamine derivs.

(Monams; use of nitroxide compds. in controlled radical polymerization for preparation of acrylic coatings)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)

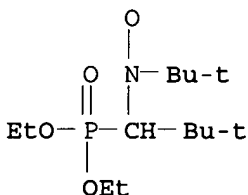


IT 188526-94-5, SG 1

(SG 1 (initiator); use of nitroxide compds. in controlled radical polymerization for preparation of acrylic coatings)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 42-7 (Coatings, Inks, and Related Products)

Section cross-reference(s): 35

IT Coating materials

Polymerization

**Polymerization catalysts**

(use of nitroxide compds. in controlled radical polymerization for preparation of acrylic coatings)

IT 188526-94-5D, alkoxyamine derivs.

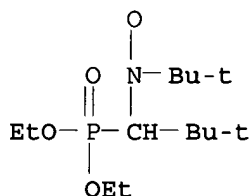
(Monams; use of nitroxide compds. in controlled radical polymerization for preparation of acrylic coatings)

IT 188526-94-5, SG 1

(SG 1 (initiator); use of nitroxide compds. in controlled radical polymerization for preparation of acrylic coatings)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 30 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2002:540898 HCAPLUS  
 DOCUMENT NUMBER: 137:247987  
 TITLE: Nitroxide-mediated miniemulsion polymerization of  
 n-butyl acrylate: synthesis of controlled  
 homopolymers and **gradient**  
**copolymers** with styrene  
 AUTHOR(S): Farcet, Celine; Charleux, Bernadette; Pirri,  
 Rosangela  
 CORPORATE SOURCE: Laboratoire de Chimie Macromoleculaire Unite Mixte  
 de Recherche associee au CNRS (UMR 7610)  
 Universite Pierre et Marie Curie, Paris, 75252,  
 Fr.  
 SOURCE: Macromolecular Symposia (2002), 182(3rd  
 IUPAC-Sponsored International Symposium on  
 Free-Radical Polymerization: Kinetics and  
 Mechanism, 2001), 249-260  
 CODEN: MSYMEC; ISSN: 1022-1360  
 PUBLISHER: Wiley-VCH Verlag GmbH  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 21 Jul 2002  
 AB Controlled free-radical homopolymn. of Bu acrylate and its copolymn.  
 with styrene have been studied in aqueous miniemulsion, using an acyclic  
 $\beta$ -phosphonylated nitroxide as a mediator, the  
 N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide, also  
 called SG1. Polymerization kinetics have been studied and characterization  
 of the (co)polymers has been performed, demonstrating the successful  
 synthesis of well-defined poly(Bu acrylate) homopolymers and poly(Bu  
 acrylate-co-styrene) **gradient copolymers**.  
 IT 188526-94-5  
 (preparation of controlled Bu acrylate homopolymer and **gradient**  
**copolymer** with styrene by miniemulsion polymerization in presence  
 of nitroxide derivative and alkoxyamine initiator)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST nitroxide mediated miniemulsion polymn butyl acrylate; styrene butyl  
 acrylate **gradient copolymer** prepn  
 IT **Polymerization catalysts**  
 (emulsion; preparation of controlled Bu acrylate homopolymer and  
**gradient copolymer** with styrene by miniemulsion  
 polymerization in presence of nitroxide derivative and alkoxyamine  
 initiator)  
 IT 83310-58-1  
 (Forafac, surfactants; preparation of controlled Bu acrylate homopolymer  
 and **gradient copolymer** with styrene by



mini-emulsion polymerization in presence of nitroxide derivative and alkoxyamine initiator)

IT 188526-94-5  
(preparation of controlled Bu acrylate homopolymer and **gradient copolymer** with styrene by mini-emulsion polymerization in presence of nitroxide derivative and alkoxyamine initiator)

IT 9003-49-0P, Poly(butyl acrylate) 25767-47-9P, Butyl acrylate-styrene copolymer  
(preparation of controlled Bu acrylate homopolymer and **gradient copolymer** with styrene by mini-emulsion polymerization in presence of nitroxide derivative and alkoxyamine initiator)

IT 151-21-3, Sodium dodecyl sulfate, uses 157710-33-3, Dowfax 8390  
(surfactants; preparation of controlled Bu acrylate homopolymer and **gradient copolymer** with styrene by mini-emulsion polymerization in presence of nitroxide derivative and alkoxyamine initiator)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 31 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:540897 HCAPLUS

DOCUMENT NUMBER: 137:263340

TITLE: Design and use of  $\beta$ -phosphorus nitroxides and alkoxyamines in controlled/"living" free radical polymerizations

AUTHOR(S): Le Mercier, Christophe; Acerbis, Sebastien; Bertin, Denis; Chauvin, Florence; Gigmes, Didier; Guerret, Olivier; Lansalot, Muriel; Marque, Sylvain; Le Moigne, Francois; Fischer, Hanns; Tordo, Paul

CORPORATE SOURCE: Aix-Marseille 1 and 3 Universities and CNRS, UMR 6517 "Chemistry, Biology and Free Radicals", Marseille, 13397, Fr.

SOURCE: Macromolecular Symposia (2002), 182(3rd IUPAC-Sponsored International Symposium on Free-Radical Polymerization: Kinetics and Mechanism, 2001), 225-247  
CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 21 Jul 2002

AB Persistent nitroxides and their corresponding alkoxyamines are important regulators of living radical polymerization. Here we describe the synthesis of  $\beta$ -phosphorus nitroxides bearing a  $\beta$ -hydrogen, that present very interesting properties for the control of the radical polymerization of styrenes, acrylates and other monomers. A large series of alkoxyamines derived from these nitroxides was prepared, and ESR (ESR) was used to determine both the temperature ( $T_c$ ) and the rate constant ( $k_d$ ) for their homolysis. For the whole series of alkoxyamines (27 compds.), a very good linear correlation was found between  $T_c$  and  $\log k_d$ . Satisfactory linear correlations were found between  $T_c$  and calculated (PM3 method) Bond Dissociation Energy (BDE) of the NO-C bond, for series of alkoxyamines with the same type of leaving radical. The characteristics of free radical polymerization of styrene carried out in the presence of these new nitroxides and alkoxyamines will be discussed.

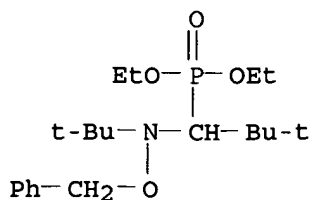
IT 224575-61-5 224575-62-6 258354-78-8  
283600-88-4 288583-07-3 288583-09-5  
288583-10-8 300811-93-2 462104-37-6

462104-38-7 462104-40-1 462104-41-2

(β-phosphorus nitroxides and alkoxyamines in controlled/living radical polymerization)

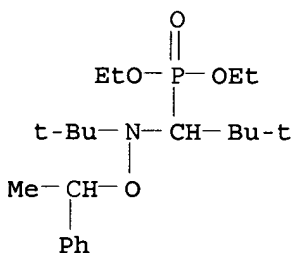
RN 224575-61-5 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(phenylmethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



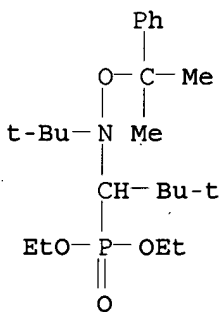
RN 224575-62-6 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



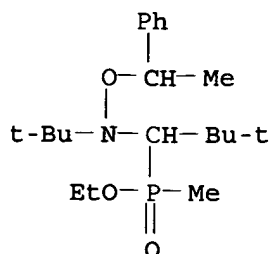
RN 258354-78-8 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-methyl-1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



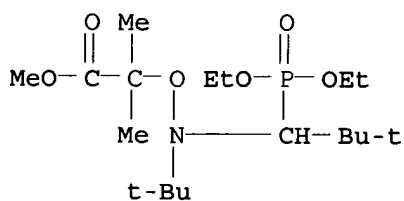
RN 283600-88-4 HCAPLUS

CN Phosphinic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]methyl-, ethyl ester (9CI) (CA INDEX NAME)



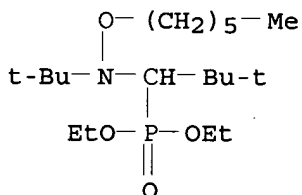
RN 288583-07-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, methyl ester, 6-oxide (CA INDEX NAME)



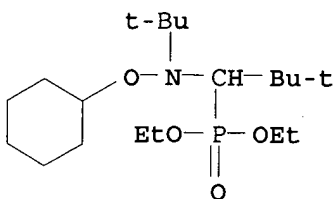
RN 288583-09-5 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (hexyloxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



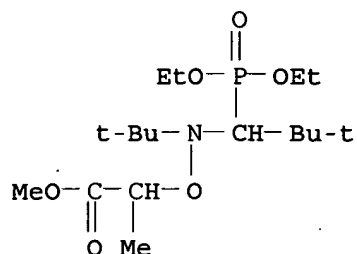
RN 288583-10-8 HCAPLUS

CN Phosphonic acid, P-[1-[(cyclohexyloxy) (1,1-dimethylethyl) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



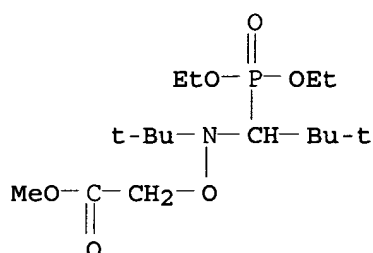
RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



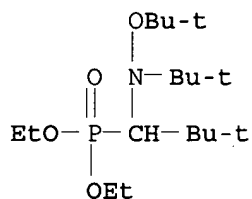
RN 462104-37-6 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-, methyl ester, 6-oxide (CA INDEX NAME)



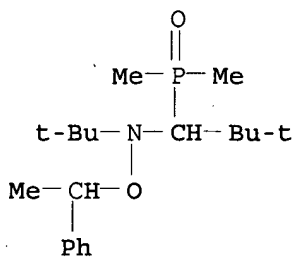
RN 462104-38-7 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethoxy)(1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 462104-40-1 HCAPLUS

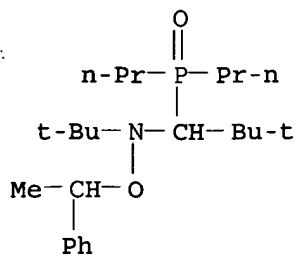
CN 1-Propanamine, N-(1,1-dimethylethyl)-1-(dimethylphosphinyl)-2,2-dimethyl-N-(1-phenylethoxy)- (9CI) (CA INDEX NAME)



RN 462104-41-2 HCAPLUS

CN 1-Propanamine, N-(1,1-dimethylethyl)-1-(dipropylphosphinyl)-2,2-

dimethyl-N-(1-phenylethoxy)- (CA INDEX NAME)



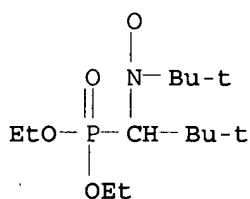
IT 188526-94-5P 188707-72-4P 462104-33-2P

462104-34-3P 462104-35-4P

(β-phosphorus nitroxides and alkoxyamines in controlled/living radical polymerization)

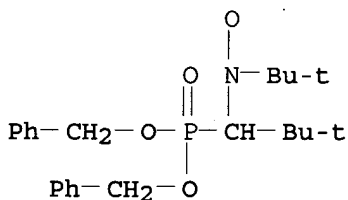
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



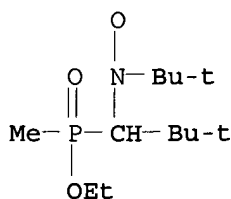
RN 188707-72-4 HCAPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)

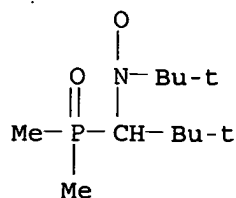


RN 462104-33-2 HCAPLUS

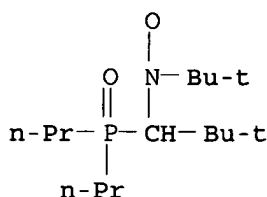
CN Nitroxide, 1,1-dimethylethyl 1-(ethoxymethylphosphinyl)-2,2-dimethylpropyl (9CI) (CA INDEX NAME)



RN 462104-34-3 HCAPLUS  
 CN Nitroxide, 1,1-dimethylethyl 1-(dimethylphosphinyl)-2,2-dimethylpropyl  
 (9CI) (CA INDEX NAME)



RN 462104-35-4 HCAPLUS  
 CN Nitroxide, 1,1-dimethylethyl 1-(dipropylphosphinyl)-2,2-dimethylpropyl  
 (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(living, radical;  $\beta$ -phosphorus nitroxides and alkoxyamines in controlled/living radical polymerization)

IT 34672-81-6 54051-40-0 54051-41-1 102261-92-7 154554-67-3  
 157462-14-1 197246-27-8 224575-61-5 224575-62-6  
 227000-59-1 258354-78-8 283600-81-7 283600-82-8  
 283600-88-4 288583-07-3 288583-09-5  
 288583-10-8 300811-93-2 462104-37-6  
 462104-38-7 462104-39-8 462104-40-1  
 462104-41-2 462104-42-3 462104-43-4 462104-44-5  
 462104-45-6

( $\beta$ -phosphorus nitroxides and alkoxyamines in controlled/living radical polymerization)

IT 188526-94-5P 188707-72-4P 258354-63-1P  
 258354-64-2P 263355-91-5P 339127-95-6P 462104-32-1P  
 462104-33-2P 462104-34-3P 462104-35-4P  
 462104-36-5P

( $\beta$ -phosphorus nitroxides and alkoxyamines in controlled/living radical polymerization)

REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 32 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:453458 HCAPLUS

DOCUMENT NUMBER: 137:155212

TITLE: Quantitative Comparison of Theory and Experiment  
 on Living Radical Polymerization Kinetics. 1.  
 Nitroxide-Mediated Polymerization

AUTHOR(S): Yoshikawa, Chiaki; Goto, Atsushi; Fukuda, Takeshi  
 CORPORATE SOURCE: Institute for Chemical Research, Kyoto University,

SOURCE: Uji Kyoto, 611-0011, Japan  
 Macromolecules (2002), 35(15), 5801-5807  
 CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

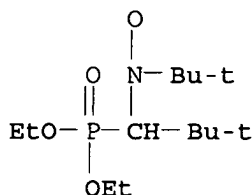
ED Entered STN: 18 Jun 2002

AB The kinetic theories on the polymerization rate and polydispersity for the persistent radical-mediated living radical polymerization were quant. tested by expts. for the bulk polymerization of styrene with PS-DEPN with or without BPO at 80 °C, where PS is polystyrene, DEPN is N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide, and BPO is benzoyl peroxide. For the BPO-free system, expts. agreed with the theories on an absolute scale, showing a 2/3-order time dependence of conversion index and a 3/8kd-dependent time evolution of polydispersity index, where kd is the dissociation rate constant. It was also exptl. demonstrated for the first time that the conventional initiation can not only increase the conversion but also lower the polydispersity at a given polymerization time t (at least when t is small), as was predicted by the theories.

IT 188526-94-5D, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide, reaction products with polystyrene (quant. comparison of theory and experiment of living radical polymerization of styrene in presence of nitroxide derivative and/or benzoyl peroxide)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**  
 Polymerization kinetics  
 (living, radical; quant. comparison of theory and experiment of living radical polymerization of styrene in presence of nitroxide derivative and/or benzoyl peroxide)

IT 94-36-0, Benzoyl peroxide, uses 9003-53-6D, Polystyrene, reaction products with tert-butyldiethylphosphonodimethylpropyl nitroxide 188526-94-5D, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide, reaction products with polystyrene (quant. comparison of theory and experiment of living radical polymerization of styrene in presence of nitroxide derivative and/or benzoyl peroxide)

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

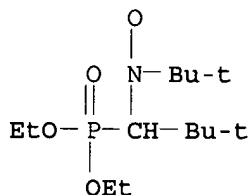
L35 ANSWER 33 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:388070 HCAPLUS

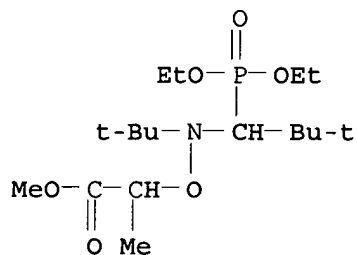
DOCUMENT NUMBER: 137:94092

TITLE: Structural Characterization of

Nitroxide-Terminated Poly(n-butyl acrylate)  
 Prepared in Bulk and Miniemulsion Polymerizations  
 Farcet, Celine; Belleney, Joeel; Charleux,  
 Bernadette; Pirri, Rosangela  
 CORPORATE SOURCE: Laboratoire de Chimie Macromoleculaire UMR 7610,  
 Universite Pierre et Marie Curie, Paris, 75252,  
 Fr.  
 SOURCE: Macromolecules (2002), 35(13), 4912-4918  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 24 May 2002  
 AB The structure of "living" poly(Bu acrylate) homopolymers prepared via  
 nitroxide-mediated controlled radical polymerization in bulk and in  
 miniemulsion at 112 °C was examined by SEC, NMR, and MALDI-TOF  
 mass spectrometry to study the influence of chain transfer to polymer.  
 The absence of detectable terminal unsatn. was confirmed by proton  
 NMR. The branched structure was observed by <sup>13</sup>C NMR. MALDI-TOF MS  
 demonstrated that the majority of chains, even at high conversion, had  
 the ideal structure with one initiator fragment and one nitroxide end  
 group. From these results, we concluded that intramol. chain transfer  
 occurred (presumably by back-biting) and was the predominant mechanism  
 throughout the polymerization at 112 °C.  
 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-  
 dimethylpropyl nitroxide 300811-93-2  
 (branching of nitroxide-terminated poly(n-Bu acrylate) prepared in  
 bulk and miniemulsion polymns.)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



RN 300811-93-2 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 36



IT Polymerization

**Polymerization catalysts**

(radical; branching of nitroxide-terminated poly(n-Bu acrylate) prepared in bulk and miniemulsion polymns.)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide 300811-93-2

(branching of nitroxide-terminated poly(n-Bu acrylate) prepared in bulk and miniemulsion polymns.)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 34 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:368534 HCAPLUS

DOCUMENT NUMBER: 136:386580

TITLE: Polymerization of vinyl chloride in the presence of a stable nitroxyl radical

INVENTOR(S): Pfaendner, Rudolf; Wannemacher, Thomas; Braun, Dietrich

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002038632	A1	20020516	WO 2001-EP12820	20011106
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ES 2250513	T3	20060416	ES 2001-1993632	20011106
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US 6844405	B2	20050118		
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PRIORITY APPLN. INFO.:			EP 2000-811066	A 20001113
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OTHER SOURCE(S): MARPAT 136:386580

ED Entered STN: 18 May 2002

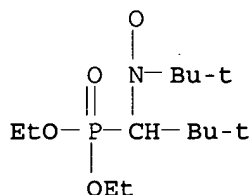
AB Present invention pertains to a process for controlled free radical polymerization or copolymn. of vinyl chloride at 40-95°, at a pressure 5-30 bar in the presence of a stable free nitroxyl radical. Thus, 62.5 g vinyl chloride, 234 mg polyvinylalc., 30 mg citric acid, 0.1 mol% (based on vinyl chloride) Luperox (1,1-dimethyl-2-ethylhexaneperoxoat), and 0.05 mol% (based on vinyl chloride) di-tert-Bu nitroxide were agitated at 70-85° and 12-18 bar for 21 h to give a polymer with 57% yield, Mn 29,000, Mw 64,000, and PD 2.2.

IT 188526-94-5

(polymerization of vinyl chloride in presence of stable nitroxyl radical)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



IC ICM C08F014-06

CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(radical; polymerization of vinyl chloride in presence of stable nitroxyl radical)

IT 686-31-7 2406-25-9, Di-tert-butyl nitroxide 51210-48-1

188526-94-5 244021-05-4 264279-93-8 264280-22-0

405940-70-7

(polymerization of vinyl chloride in presence of stable nitroxyl radical)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 35 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:319042 HCAPLUS

DOCUMENT NUMBER: 137:20639

TITLE: Synthesis and Characterization of  
Poly(styrene-b-n-butyl acrylate-b-styrene)  
Triblock Copolymers Using a Dialkoxyamine as  
Initiator

AUTHOR(S): Robin, Sophie; Guerret, Olivier; Couturier,  
Jean-Luc; Pirri, Rosangela; Gnanou, Yves

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 \text{O}-\text{N}-\text{CH}-\text{Bu-t} \\
 | \quad | \\
 \text{O} \quad \text{O} \\
 || \quad || \\
 \text{C} \quad \text{C} \\
 | \quad | \\
 \text{CH}-\text{Me}
 \end{array}$$

CC 35-3 (Chemistry of Synthetic High Polymers)  
 IT Polymerization catalysts  
 (preparation and characterization of Bu acrylate-styrene triblock copolymers using dialkoxyamine as initiator)  
 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide  
 (initiators; polymerization of Bu acrylate using dialkoxyamine as initiator and)  
 IT 300811-94-3  
 (initiators; preparation and characterization of Bu acrylate-styrene triblock copolymers using dialkoxyamine as initiator)  
 REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 36 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:151910 HCAPLUS

DOCUMENT NUMBER: 136:325922

TITLE: Synthesis of Stars and Starlike Block Copolymers from a Trialkoxyamine Used as Initiator

AUTHOR(S): Robin, Sophie; Guerret, Olivier; Couturier, Jean-Luc; Gnanou, Yves

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques, ENSCPB-CNRS-Universite Bordeaux-I, Talence, 33402, Fr.

SOURCE: Macromolecules (2002), 35(7), 2481-2486

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

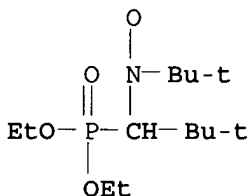
ED Entered STN: 28 Feb 2002

AB This study investigates the efficiency of a novel trifunctional alkoxyamine (1) based on N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (SG1) (2) as initiator for the controlled radical polymerization of styrene (S) and Bu acrylate (nBuA). Three factors, namely the concentration of SG1 initially introduced in excess, the monomer conversion, and in the specific case of PS samples-the monomer autopolymerization, were found to control the quality of the star samples obtained. Well-defined T-(PBuA-b-PS)<sub>3</sub> star block copolymers could also be synthesized by sequential copolymerization using the same trifunctional initiator.

IT 188526-94-5  
 (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)

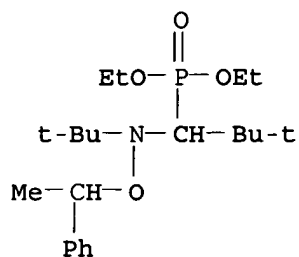


IT 224575-62-6P  
 (catalyst; in synthesis of stars and starlike block copolymers from

a trialkoxyamine used as initiator)

RN 224575-62-6 HCAPLUS

Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



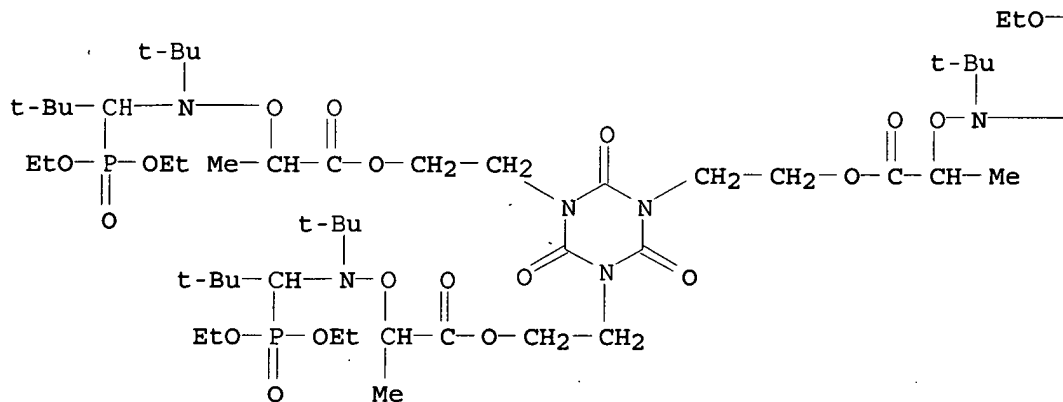
IT 300811-95-4P

(catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

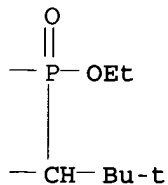
RN 300811-95-4 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-triyl)tri-2,1-ethanediyl ester, 6,6',6''-trioxide (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 35-4 (Chemistry of Synthetic High Polymers)

ST styrene butyl acrylate star block copolymer polymn catalyst;

trifunctional alkoxyamine nitroxide polymn initiator  
 controlled radical polymn

IT Molecular weight  
 Molecular weight distribution  
 Polymerization catalysts  
 (synthesis of stars and starlike block copolymers from a  
 trialkoxyamine used as initiator)

IT 188526-94-5  
 (catalyst; in synthesis of stars and starlike block copolymers from  
 a trialkoxyamine used as initiator)

IT 224575-62-6P  
 (catalyst; in synthesis of stars and starlike block copolymers from  
 a trialkoxyamine used as initiator)

IT 300811-95-4P  
 (catalyst; in synthesis of stars and starlike block copolymers from  
 a trialkoxyamine used as initiator)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 37 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:818780 HCAPLUS

DOCUMENT NUMBER: 136:86109

TITLE: Living Radical Polymerization: Use of an Excess of  
 Nitroxide as a Rate Moderator

AUTHOR(S): Lacroix-Desmazes, Patrick; Lutz, Jean-Francois;  
 Chauvin, Florence; Severac, Romain; Boutevin,  
 Bernard

CORPORATE SOURCE: Laboratoire de Chimie Macromoleculaire, Ecole  
 Nationale Supérieure de Chimie de Montpellier,  
 Montpellier, 34296, Fr.

SOURCE: Macromolecules (2001), 34(26), 8866-8871

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

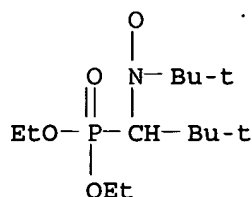
ED Entered STN: 12 Nov 2001

AB The kinetics of the living radical polymerization of Bu acrylate (BuA) in the  
 presence of an excess of N-tert-butyl-N-(1-diethylphosphono-2,2-  
 dimethylpropyl)-N-oxyl (DEPN) as a rate moderator has been studied in  
 the temperature range 115-125 °C. The equilibrium rate constant  $K = k_d/k_c$   
 between dormant and active chains was determined exptl. from the slope of  
 $\ln([BuA]_0/[BuA])$  vs time. It obeys the following Arrhenius relation:  
 $K = 4.93 + 105 \exp(-119.3 \text{ kJ mol}^{-1}/RT)$ , i.e.,  $K = 1.09 +$   
 $10^{-10} \text{ mol L}^{-1}$  at 125 °C. Some straightforward anal. kinetic  
 equations that only depend on the excess of DEPN as the exptl.  
 parameter were established. These equations were successfully applied  
 to simulate the DEPN-mediated polymerization of Bu acrylate initiated by  
 either a styryl-DEPN alkoxyamine or an AIBN/DEPN bicomponent system.  
 Last, the slow degradation of DEPN was considered in order to account for  
 the upward deviation of the kinetics when a great excess of DEPN was  
 used.

IT 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-  
 dimethylpropyl)-N-oxyl 224575-62-6  
 (kinetics of living radical polymerization of Bu acrylate in presence of  
 tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

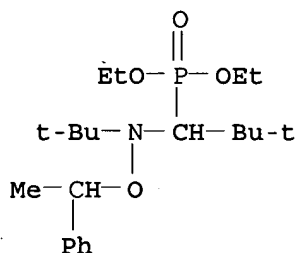
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



RN 224575-62-6 HCAPLUS

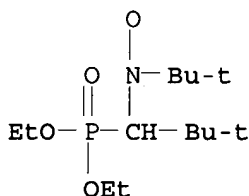
CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



IT 188526-94-5DP, reaction products with polystyrene  
(kinetics of living radical polymerization of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

Polymerization kinetics

(living, radical; kinetics of living radical polymerization of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 78-67-1, AIBN 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl 224575-62-6

(kinetics of living radical polymerization of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 9003-53-6DP, Polystyrene, reaction products with tert-butyl(diethylphosphonodimethylpropyl)oxyl 188526-94-5DP, reaction products with polystyrene

(kinetics of living radical polymerization of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

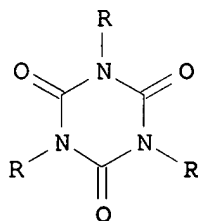
REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

## RE FORMAT

L35 ANSWER 38 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:747176 HCAPLUS  
 DOCUMENT NUMBER: 135:289208  
 TITLE: Multimodal polymers by controlled radical  
 polymerization in the presence of alkoxyamines  
 INVENTOR(S): Guerret, Olivier; Robin, Sophie; Gnanou, Yves  
 PATENT ASSIGNEE(S): ATOFINA, Fr.  
 SOURCE: Eur. Pat. Appl., 24 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1142913	A1	20011010	EP 2001-106802	20010319
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
FR 2807439	A1	20011012	FR 2000-4557	20000407
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FR 2807439	B1	20030613		
CA 2343339	C	20011007	CA 2001-2343339	20010406
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CA 2343339	A1	20011007		
MX 2001PA03584	A	20050419	MX 2001-PA3584	20010406
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CN 1318570	A	20011024	CN 2001-117832	20010407
<--				
JP 2001316409	A	20011113	JP 2001-109720	20010409
<--				
US 2002040117	A1	20020404	US 2001-828476	20010409
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US 6646079	B2	20031111		
PRIORITY APPLN. INFO.:			FR 2000-4557	A 20000407
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ED Entered STN: 12 Oct 2001  
 GI

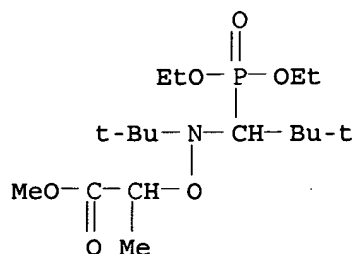


I, R = (CH<sub>2</sub>)<sub>2</sub>O<sub>2</sub>CCHMeON(CMe<sub>3</sub>)CH(CMe<sub>3</sub>)P(O)(OEt)<sub>2</sub>

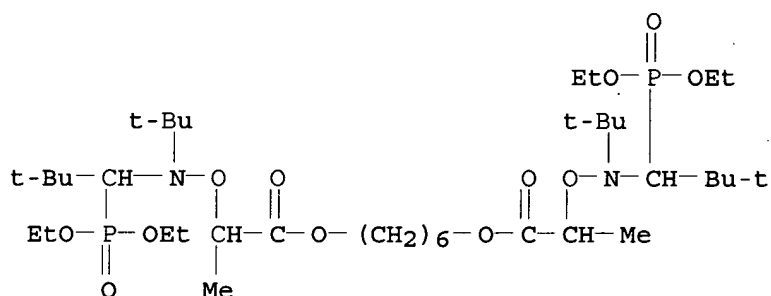
AB Polymers with multimodal d.p. are manufactured by radical polymerization of monomers in the presence of alkoxyamines having ≥1 amine group and groups with mol. weight >15 in the β-position to the N, such as triazine derivative I.



IT 300811-93-2 300811-94-3 300811-95-4  
 (multimodal polymers by controlled radical polymerization in presence of  
 alkoxyamines)  
 RN 300811-93-2 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)

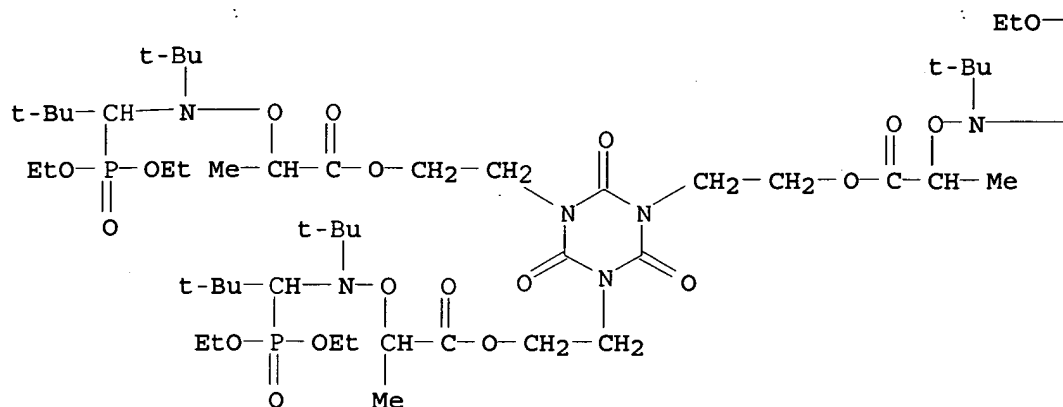


RN 300811-94-3 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX  
 NAME)

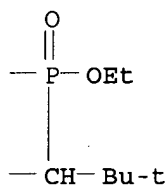


RN 300811-95-4 HCAPLUS  
 CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-  
 ethoxy-2-methyl-, (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-  
 triyl)tri-2,1-ethanediyl ester, 6,6',6''-trioxide (9CI) (CA INDEX  
 NAME)

PAGE 1-A



PAGE 1-B



IC ICM C08F004-00  
 ICS C08F293-00; C08F002-38  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 IT **Polymerization catalysts**  
 (multimodal polymers by controlled radical polymerization in presence of alkoxyamines)  
 IT 78-67-1, Azobisisobutyronitrile 300811-93-2  
 300811-94-3 300811-95-4 364731-73-7  
 (multimodal polymers by controlled radical polymerization in presence of alkoxyamines)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 39 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:440106 HCAPLUS  
 DOCUMENT NUMBER: 135:195844  
 TITLE: Determination of Activation and Deactivation Rate Constants of Model Compounds in Atom Transfer Radical Polymerization  
 AUTHOR(S): Matyjaszewski, Krzysztof; Paik, Hyun-jong; Zhou, Peng; Diamanti, Steve J.  
 CORPORATE SOURCE: Center for Macromolecular Engineering Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, 15213, USA  
 SOURCE: Macromolecules (2001), 34(15), 5125-5131  
 CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

ED Entered STN: 19 Jun 2001

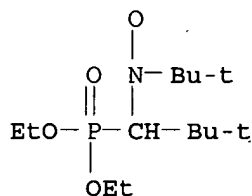
AB The activation and deactivation rate consts. in atom transfer radical polymerization (ATRP) were measured using model compds. The activation rate consts. were determined using HPLC or GC under the kinetic isolation condition achieved by trapping the generated radical with 2,2,6,6-tetramethylpiperidiny-1-oxy (TEMPO). The deactivation rate consts. were measured by trapping 1-phenylethyl radicals with TEMPO in a competitive reaction. The effects of several parameters in ATRP systems were examined, including alkyl groups, ligands, transferred groups, and solvents. The data obtained were consistent with ATRP kinetics and provided further quant. insights into understanding the ATRP processes.

IT 188526-94-5 224575-62-6

(determination of activation and deactivation rate constant of model compds. in atom transfer radical polymerization)

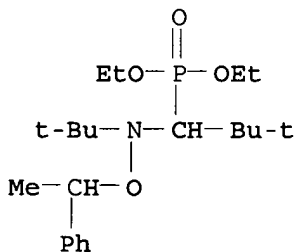
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 224575-62-6 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(radical; in determination of activation and deactivation rate constant of model compds. in atom transfer radical polymerization)

IT 154554-67-3 188526-94-5 224575-62-6

(determination of activation and deactivation rate constant of model compds. in atom transfer radical polymerization)

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 40 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:417098 HCAPLUS  
 DOCUMENT NUMBER: 135:5995  
 TITLE: Composition and method for inhibiting  
 polymerization and polymer growth  
 INVENTOR(S): Benage, Brigitte; Abruscato, Gerald J.; Sikora,  
 David J.; Grewal, Ruben S.  
 PATENT ASSIGNEE(S): Uniroyal Chemical Company, Inc., USA  
 SOURCE: PCT Int. Appl., 96 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001040404	A1	20010607	WO 2000-US31101	20001113
<--				
W: BR, CA, CN, ID, JP, KR, MX, SG				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
CA 2392526	A1	20010607	CA 2000-2392526	20001113
<--				
EP 1235885	A1	20020904	EP 2000-978566	20001113
<--				
EP 1235885	B1	20070815		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
BR 2000016113	A	20021126	BR 2000-16113	20001113
<--				
JP 2003515656	T	20030507	JP 2001-541145	20001113
<--				
TW 259185	B	20060801	TW 2000-89125330	20001129
<--				
MX 2002PA05502	A	20020902	MX 2002-PA5502	20020603
<--				
US 2005113625	A1	20050526	US 2004-24217	20041228
<--				
US 2005113626	A1	20050526	US 2004-24342	20041228
<--				
PRIORITY APPLN. INFO.:			US 1999-168623P	P 19991203
<--				
			US 2000-580343	A 20000525
<--				
			WO 2000-US31101	W 20001113
<--				

OTHER SOURCE(S): MARPAT 135:5995

ED Entered STN: 08 Jun 2001

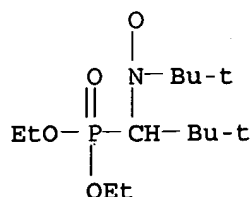
AB The method for inhibiting the premature polymerization and the polymer growth  
 of ethylenically unsatd. monomers comprises adding an effective amount  
 of  $\geq 1$  hydrogen donor or electron acceptor inhibitor. Thus,  
 4-oxo-TEMPO 300 and diethylhydroxylamine 3000 ppm were mixed with  
 styrene, showing only 20% increase in weight of insol. polymer after 7 h,  
 comparing 684% when only 4-oxo-TEMPO was used.

IT 188526-94-5

(inhibiting polymerization and polymer growth)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



IC ICM C09K015-04

ICS C07C007-20

CC 35-3 (Chemistry of Synthetic High Polymers)

IT Electron accelerators

**Polymerization inhibitors**

(inhibiting polymerization and polymer growth)

IT 79-74-3 84-54-8, 2-Methylanthraquinone 88-58-4 95-31-8,  
 N-tert-Butyl-2-benzothiazolesulfenamide 95-71-6 98-29-3 100-15-2  
 100-64-1 106-51-4, 2,5-Cyclohexadiene-1,4-dione, uses 130-15-4,  
 1,4-Naphthoquinone 530-17-6 536-74-3, Phenylacetylene 613-31-0,  
 Dihydroanthracene 621-07-8, Dibenzylhydroxylamine 2154-35-0  
 2154-37-2 2154-69-0 2226-96-2 2406-25-9 2460-77-7 2516-88-3  
 2516-91-8 2516-92-9 2564-83-2 2564-88-7 3081-01-4 3225-24-9  
 3225-25-0 3229-53-6 3551-21-1 3710-84-7 3936-30-9 4130-42-1  
 6599-87-7 7078-98-0 7440-50-8, Copper, uses 14329-20-5  
 14691-88-4 21450-72-6 23037-14-1 24799-67-5 32154-44-2  
 34272-83-8 37149-18-1 38078-71-6 38632-29-0 38632-35-8  
 40289-91-6 54416-73-8 61015-94-9 71335-68-7 77432-44-1  
 87773-28-2 94271-84-8 103630-30-4 118191-03-0 123772-30-5  
 133406-90-3 153784-62-4 179552-47-7 179552-48-8 184160-78-9  
**188526-94-5** 189291-86-9 342046-68-8 342046-71-3  
 342046-72-4 342046-73-5 342046-74-6 342046-75-7 342046-76-8  
 342046-77-9 342046-78-0 342046-79-1 342046-80-4 342046-81-5  
 342046-82-6 342046-83-7 342046-84-8 342046-85-9

(inhibiting polymerization and polymer growth)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 41 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:221152 HCAPLUS

DOCUMENT NUMBER: 135:5873

TITLE: Determination of the deactivation rate constants  
 of 1-phenylethyl radical with Cu(II)X<sub>2</sub>/4,4'-di(5-nonyl)-2,2'-bipyridine

AUTHOR(S): Paik, Hyun-jong; Matyjaszewski, Krzysztof  
 CORPORATE SOURCE: Center for Macromolecular Engineering, Department  
 of Chemistry, Carnegie Mellon University,  
 Pittsburgh, PA, 15213, USA

SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (2001),  
 42(1), 617-618

PUBLISHER: CODEN: ACPPAY; ISSN: 0032-3934  
 American Chemical Society, Division of Polymer  
 Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

ED Entered STN: 29 Mar 2001

AB We have determined the deactivation rate consts. for 1-phenylethyl radical  
 with Cu(II)Br<sub>2</sub> (and Cu(II)Cl<sub>2</sub>)/4,4'-di(5-nonyl)-2,2'-bipyridine as a

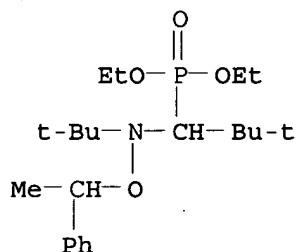
model compound of a polystyrene chain end using the competition kinetic experiment with TEMPO. Knowledge of these rate consts. will be helpful to understand better and optimize current catalyst systems and design the new ATRP catalysts. However it is worth noting that these data are for the model compds. but not for the real polymerization system. Therefore the difference of model system from real polymeric system should be examined. Another caveat should be placed on the fact that these measurements were made with only higher oxidation metal complex, different from real system where higher and lower oxidation metal complexes exist together and interact.

IT 224575-62-6

(determination of deactivation rate consts. of phenylethyl radical as model for polystyrene chain with Cu(II)X<sub>2</sub>/dinonylbipyridine)

RN 224575-62-6 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization

**Polymerization catalysts**

(atom transfer, radical; determination of deactivation rate consts. of phenylethyl radical as model for polystyrene chain with Cu(II)X<sub>2</sub>/dinonylbipyridine)

IT 585-71-7, 1-Phenylethyl bromide 2564-83-2, TEMPO 154554-67-3

224575-62-6

(determination of deactivation rate consts. of phenylethyl radical as model for polystyrene chain with Cu(II)X<sub>2</sub>/dinonylbipyridine)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 42 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:31452 HCAPLUS

DOCUMENT NUMBER: 134:101275

TITLE: Preparation of mono and multifunctional alkoxyamines for forming nitroxyl radical initiators and regulators useful in the preparation of polymers with narrow polydispersity

INVENTOR(S): Kramer, Andreas; Nesvadba, Peter; Zink, Marie-Odile; Wunderlich, Wiebke

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 74 pp.

CODEN: PIXXD2

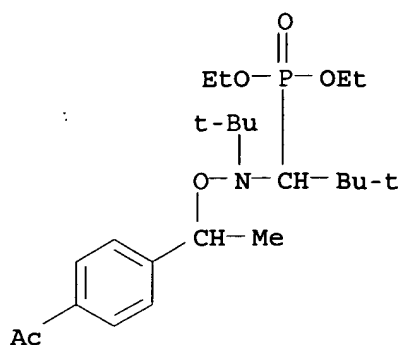
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

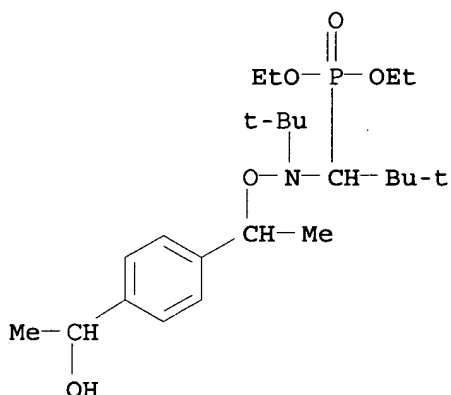
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001002345	A2	20010111	WO 2000-EP5899	20000626
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WO 2001002345	A3	20010719		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2375806	A1	20010111	CA 2000-2375806	20000626
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EP 1189875	A2	20020327	EP 2000-951302	20000626
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EP 1189875	B1	20040804		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2003503474	T	20030128	JP 2001-507787	20000626
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AT 272610	T	20040815	AT 2000-951302	20000626
<--				
US 6875831	B1	20050405	US 2001-19618	20011220
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PRIORITY APPLN. INFO.:			EP 1999-810567	A 19990702
<--				
			WO 2000-EP5899	W 20000626
<--				
OTHER SOURCE(S): MARPAT 134:101275				
ED Entered STN: 12 Jan 2001				
AB The title alkoxyamines especially useful for the living polymerization of unsatd. monomers or/and oligomers giving polymers with good conversion are compds. bearing groups which can liberate stable free nitroxyl radicals of specific structures.				
IT	319458-52-1P 319458-53-2P (initiator/intermediate for multifunctional initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)			
RN	319458-52-1 HCAPLUS			
CN	Phosphonic acid, [1-[[[1-(4-acetylphenyl)ethoxy](1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)			



RN 319458-53-2 HCAPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)[1-[4-(1-hydroxyethyl)phenyl]ethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



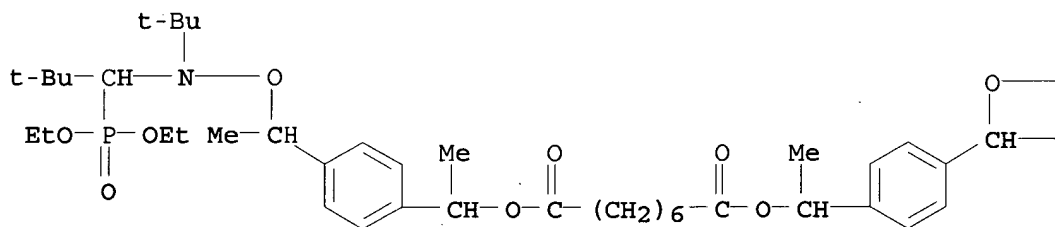
IT 319458-54-3P

(initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

RN 319458-54-3 HCAPLUS

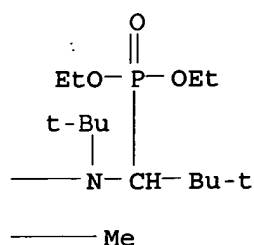
CN Octanedioic acid, bis[1-[4-[3,4-bis(1,1-dimethylethyl)-5-ethoxy-1-methyl-5-oxido-2,6-dioxo-3-aza-5-phosphaoct-1-yl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A





PAGE 1-B



IC ICM C07C239-20

ICS C07D211-94; C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(living; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

IT **Polymerization catalysts**

(radical; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

IT 243972-13-6P 243972-14-7P 243972-16-9P 264280-52-6P

319457-95-9P 319457-96-0P 319457-97-1P 319458-04-3P

319458-08-7P 319458-11-2P 319458-12-3P 319458-15-6P

319458-16-7P 319458-17-8P 319458-25-8P 319458-26-9P

319458-28-1P 319458-30-5P 319458-31-6P 319458-33-8P

319458-35-0P 319458-36-1P 319458-38-3P 319458-39-4P

319458-41-8P 319458-42-9P 319458-44-1P 319458-45-2P

319458-47-4P 319458-48-5P 319458-50-9P **319458-52-1P****319458-53-2P**

(initiator/intermediate for multifunctional initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

IT 264280-51-5P 319457-98-2P 319457-99-3P 319458-00-9P

319458-01-0P 319458-02-1P 319458-03-2P 319458-05-4P

319458-06-5P 319458-07-6P 319458-09-8P 319458-10-1P

319458-13-4P 319458-14-5P 319458-18-9P 319458-19-0P

319458-20-3P 319458-21-4P 319458-22-5P 319458-23-6P

319458-24-7P 319458-27-0P 319458-29-2P 319458-32-7P

319458-34-9P 319458-37-2P 319458-40-7P 319458-43-0P

319458-46-3P 319458-49-6P 319458-51-0P **319458-54-3P**

(initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

L35 ANSWER 43 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:4871 HCAPLUS

DOCUMENT NUMBER: 134:223061

TITLE: Tridentate Nitrogen-Based Ligands in Cu-Based ATRP: A Structure-Activity Study

AUTHOR(S): Matyjaszewski, Krzysztof; Goebelt, Bernd; Paik, Hyun-jong; Horwitz, Colin P.

CORPORATE SOURCE: Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, 15213, USA

SOURCE: Macromolecules (2001), 34(3), 430-440

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

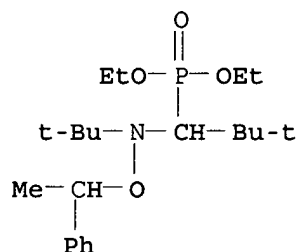
ED Entered STN: 03 Jan 2001

AB The kinetic parameters for the activation and deactivation steps in ATRP for Cu-based catalysts were determined with eight different tridentate nitrogen-based ligands. Addnl., the redox properties of these Cu complexes were measured by cyclic voltammetry. By correlating the kinetic parameters of the activation and deactivation steps with the reduction potential of the Cu(II) complexes, it was found that more reducing Cu catalysts form faster activating Cu(I) and slower deactivating Cu(II) species. The rate of activation depends on the nature of the N-binding site of the ligand. Ligands with alkylamine or pyridine binding sites form the fastest activating catalysts. The phenyl-substituted ligands form very slowly activating and very rapidly deactivating catalysts. Slower deactivation rates were found for catalysts with a central pyridine unit in the ligand than for catalysts derived from ligands with a central amine unit. In general, the activity of the ligands decreases in the following order: alkylamine  $\approx$  pyridine  $>$  alkylimine  $\gg$  arylimine  $>$  arylamine.

IT 224575-62-6  
(in deactivation study of different tridentate nitrogen-based ligands for atom transfer radical polymerization with copper bromide catalyst)

RN 224575-62-6 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**  
(atom transfer, radical; evaluation of different tridentate nitrogen-based ligands for atom transfer radical polymerization with copper bromide catalyst)

IT 224575-62-6  
(in deactivation study of different tridentate nitrogen-based ligands for atom transfer radical polymerization with copper bromide catalyst)

REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 44 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:842098 HCAPLUS

DOCUMENT NUMBER: 134:29789

TITLE: Alkoxyamine phosphonates and their use as polymerization catalysts

INVENTOR(S): Guerret, Olivier; Couturier, Jean-Luc; Lutz, Jean-Francois; Le Mercier, Christophe; Robin, Sophie; Vuillemin, Bruno

PATENT ASSIGNEE(S): ATOFINA, Fr.

SOURCE: PCT Int. Appl., 59 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000071501	A1	20001130	WO 2000-FR1287	20000512

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

FR 2794459	A1	20001208	FR 1999-6329	19990519
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FR 2794459	B1	20040903		
EP 1178955	A1	20020213	EP 2000-929608	20000512

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

JP 2003500378	T	20030107	JP 2000-619758	20000512
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MX 2001PA11916	A	20020506	MX 2001-PA11916	20011119
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US 6657043	B1	20031202	US 2002-979124	20020315
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PRIORITY APPLN. INFO.:			FR 1999-6329	A 19990519
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			WO 2000-FR1287	W 20000512
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ED Entered STN: 01 Dec 2000

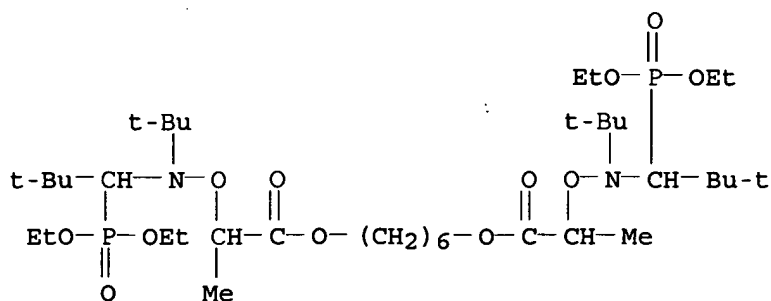
AB Alkoxyamine phosphonates containing 2-3 alkoxyamine groups are obtained from  $\beta$ -substituted nitroxides such as di-Et 2,2-dimethyl-1-(tert-butylamino)propylphosphonate N-oxide (I) and are suitable for application as radical polymerization catalysts with good control. The inventive compds. can be used as initiators for (co)polymns. of at least one radically polymerizable monomer. Thus, I was condensed (2:1) with the Br groups in 1,6-hexanediol bis(2-bromopropionate) to give a bis(alkoxyamine phosphonate) which could be used to homopolymerize styrene or block copolymerize styrene with Bu acrylate.

IT 300811-94-3P 300811-95-4P 310878-79-6P  
 310878-80-9P 310878-81-0P 310878-82-1P  
 310878-83-2P

(production of alkoxyamine phosphonates for use as radical polymerization catalysts)

RN 300811-94-3 HCAPLUS

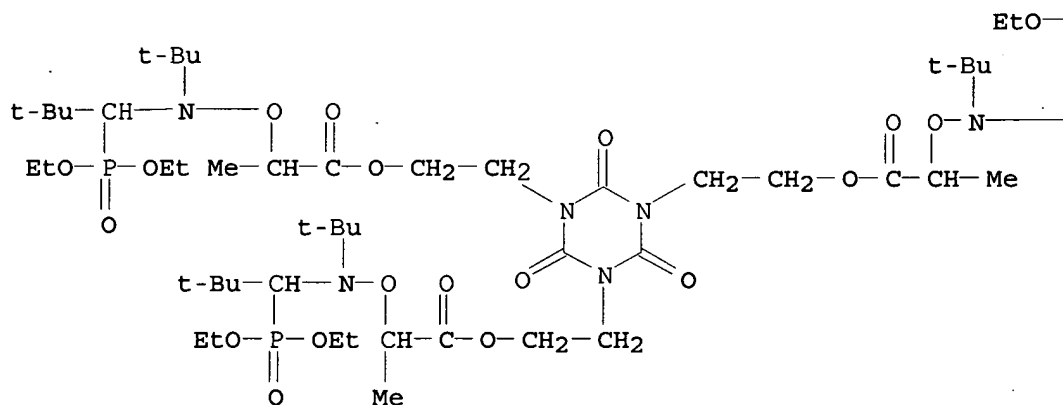
CN 3,7-Dioxa-4-aza-6-phosphanonoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX NAME)



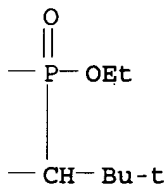
RN 300811-95-4 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, (2,4,6-trioxo-1,3,5-triazine-1,3,5(2H,4H,6H)-triyl)tri-2,1-ethanediyl ester, 6,6',6''-trioxide (9CI) (CA INDEX NAME)

PAGE 1-A

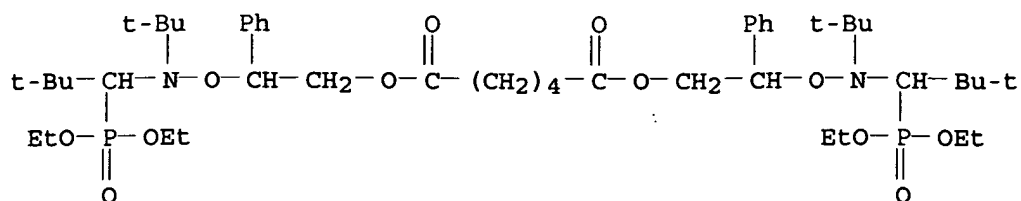


PAGE 1-B



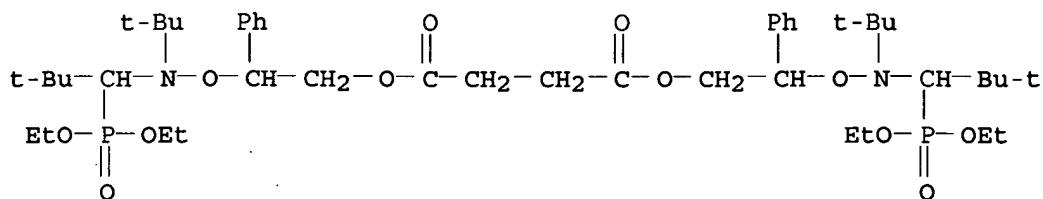
RN 310878-79-6 HCAPLUS

CN Hexanedioic acid, bis[4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphanon-1-yl] ester (9CI) (CA INDEX NAME)



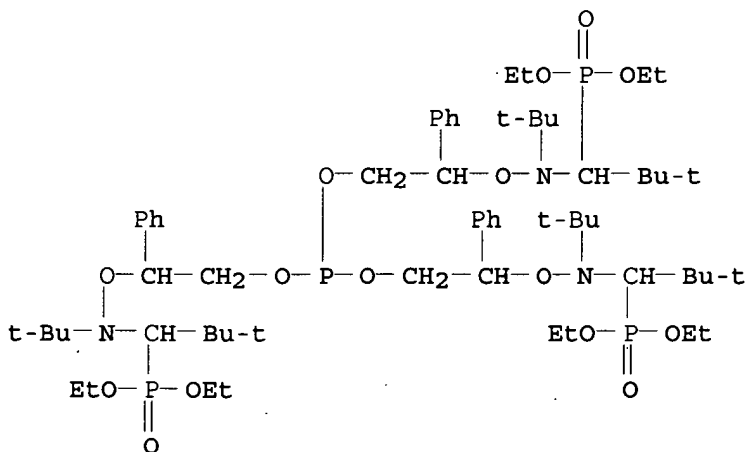
RN 310878-80-9 HCAPLUS

CN Butanedioic acid, bis[4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphanon-1-yl] ester (9CI) (CA INDEX NAME)



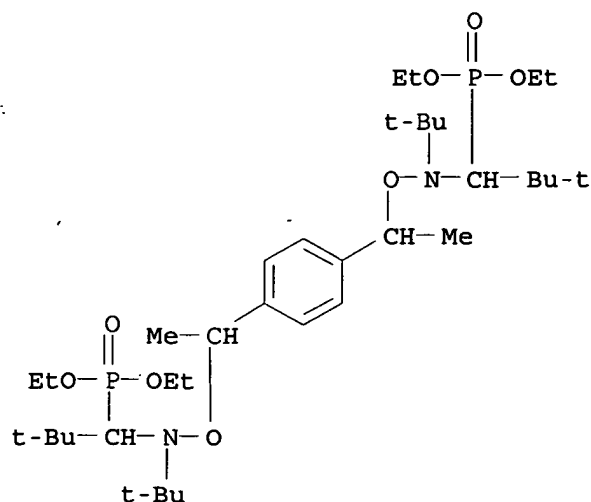
RN 310878-81-0 HCAPLUS

CN Phosphonic acid, [phosphinidynetris[oxy(1-phenyl-2,1-ethanediyloxy[(1,1-dimethylethyl)imino](2,2-dimethylpropylidene)]]tris-, hexaethyl ester (9CI) (CA INDEX NAME)



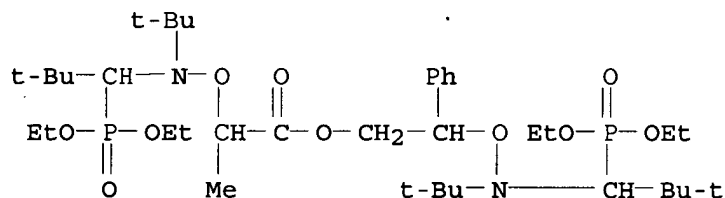
RN 310878-82-1 HCAPLUS

CN Phosphonic acid, [1,4-phenylenebis[ethylideneoxy[(1,1-dimethylethyl)imino](2,2-dimethylpropylidene)]]bis-, tetraethyl ester (9CI) (CA INDEX NAME)



RN 310878-83-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphanon-1-yl ester, 6-oxide (9CI) (CA INDEX NAME)

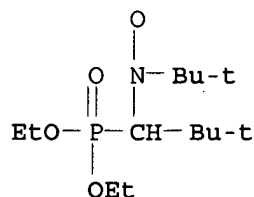


IT 188526-94-5

(starting material; production of alkoxyamine phosphonates for use as radical polymerization catalysts)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



IC ICM C07C239-20

ICS C07F009-40; C07D251-32; C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 29

IT Polymerization catalysts

(radical; production of alkoxyamine phosphonates for use as)

IT 300811-94-3P 300811-95-4P 310878-79-6P  
 310878-80-9P 310878-81-0P 310878-82-1P  
 310878-83-2P  
 (production of alkoxyamine phosphonates for use as radical polymerization catalysts)

IT 563-76-8, 2-Bromopropionyl bromide 839-90-7; 1,3,5-Tris(2-hydroxyethyl)cyanuric acid 17194-87-5, p-Bis(1-bromoethyl)benzene 52255-99-9 188526-94-5 310878-84-3, 1,6-Hexanediol bis(2-bromopropionate) 310878-85-4 310878-86-5 310878-88-7  
 (starting material; production of alkoxyamine phosphonates for use as radical polymerization catalysts)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 45 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:814527 HCAPLUS

DOCUMENT NUMBER: 133:350716

TITLE: Process for polymerization using unsymmetrically free-radical initiators to control type and degree of polymerization and unsymmetrically free-radical initiators

INVENTOR(S): Matthews, Randall Stryker; Smith, Steven Daryl

PATENT ASSIGNEE(S): The Procter & Gamble Co., USA

SOURCE: PCT Int. Appl., 33 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000068275	A1	20001116	WO 2000-US12700	20000509

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RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

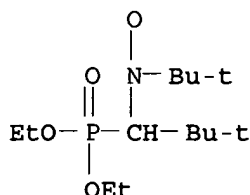
PRIORITY APPLN. INFO.: US 1999-133338P P 19990510

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ED Entered STN: 21 Nov 2000

AB The process for initiating polymerization comprises (a) reacting a unsym. initiator RN:NLA, {R = a unit forming a free radical which does not initiate polymerization; A = a unit reacting with a polymer core functional group; L (a unit forming a free radical moiety) = (un)substituted C1-C10 linear or branched alkylene, C3-20 arylene, C4-20 alkyl-substituted arylene, C4-C20 alkylarylene; e.g., 4-[(triphenylmethyl)azobenzoic acid]} with a polymer core having n functional groups (e.g., Starburst 1st Generation) reacting with the unsym. initiator to form a conjugate [RN:NLA']n[Core] (A' = linking unit to the polymer core); (b) adding to the conjugate ≥1 monomer (e.g., Bu acrylate) to form a reaction mixture; and (c) initiating polymerization at 0-160°. The initiators and processes are

especially, useful for dendrimer or "star" polymers.  
 IT 188526-94-5, N-tert-Butyl N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxyl radical  
 (radical scavenger; process for polymerization using unsym. free-radical initiators to control type and d.p.)  
 RN 188526-94-5 HCAPLUS  
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



IC ICM C08F004-04  
 ICS C08F002-06  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 IT **Polymerization catalysts**  
 (radical, unsym.; process for polymerization using unsym. free-radical initiators to control type and d.p.)  
 IT 5873-93-8, Di(thiobenzoyl) disulfide 188526-94-5,  
 N-tert-Butyl N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxyl  
 radical  
 (radical scavenger; process for polymerization using unsym. free-radical initiators to control type and d.p.)  
 REFERENCE COUNT: 4. THERE ARE 4 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 46 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:758837 HCAPLUS

DOCUMENT NUMBER: 134:42480

TITLE: Mechanistic aspects of nitroxide-mediated controlled radical polymerization of styrene in miniemulsion, using a water-soluble radical initiator

AUTHOR(S): Farcet, C.; Lansalot, M.; Charleux, B.; Pirri, R.; Vairon, J. P.

CORPORATE SOURCE: Laboratoire de Chimie Macromoléculaire UMR 7610, Université Pierre et Marie Curie, Paris, 75252, Fr.

SOURCE: Macromolecules (2000), 33(23), 8559-8570  
 CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

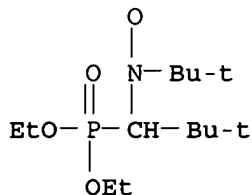
ED Entered STN: 30 Oct 2000

AB Nitroxide-mediated controlled free-radical polymerization of styrene was studied in a miniemulsion system. The use of an acyclic  $\beta$ -phosphonylated nitroxide enabled polymerization to be performed at a temperature below 100 °C, typically 90 °C. A bicomponent initiating system was chosen, i.e., a radical initiator in conjunction with added free nitroxide. This work focused on the mechanistic understanding of the polymerization. The parameters that affect both the kinetics of polymerization and the control of the mol. weight and mol. weight



distribution have been examined and discussed, such as the nature and concentration of the pH buffer, the initiator concentration, the monomer/water ratio, and the process for chain extension.

IT 188526-94-5  
(in nitroxide-mediated controlled radical polymerization of styrene in miniemulsion)  
RN 188526-94-5 HCAPLUS  
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts  
(radical; in nitroxide-mediated controlled miniemulsion radical polymerization of styrene)

IT 188526-94-5  
(in nitroxide-mediated controlled radical polymerization of styrene in miniemulsion)

REFERENCE COUNT: 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 47 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:756754 HCAPLUS

DOCUMENT NUMBER: 133:322570

TITLE: Method for the production of a controlled rheological propylene resin

INVENTOR(S): Bertin, Denis; Robert, Patrice

PATENT ASSIGNEE(S): ATOFINA, Fr.

SOURCE: PCT Int. Appl., 48 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000063260	A1	20001026	WO 2000-FR1026	20000419

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RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

FR 2792321	A1	20001020	FR 1999-4888	19990419
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FR 2792321	B1	20031212		
CA 2370941	A1	20001026	CA 2000-2370941	20000419
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EP 1192192	A1	20020403	EP 2000-920844	20000419
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EP 1192192	B1	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,				
PT, IE, SI, LT, LV, FI, RO				
JP 2002542346	T	20021210	JP 2000-612345	20000419
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AT 235521	T	20030415	AT 2000-920844	20000419
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ES 2194718	T3	20031201	ES 2000-920844	20000419
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US 6620892	B1	20030916	US 2002-959278	20020220
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PRIORITY APPLN. INFO.:			FR 1999-4888	A 19990419
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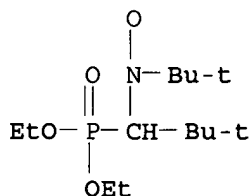
ED Entered STN: 27 Oct 2000

AB The invention relates to a method for the production of a controlled rheol. homopolymer or copolymer of propylene or a composition comprising a homopolymer or copolymer of propylene in the absence of a functional monomer. The inventive method increases the melt flow index of the resin by cutting the chains using a **polymerization initiator** and is characterized in that at least one stable free radical is incorporated into the resin in a viscous state, whereupon a solid product is formed having an increased melt flow index. The stable free radical or radicals are more particularly chosen from nitroxyl radicals, containing at least one group :NO•.

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide 188707-72-4, N-tert-Butyl-1-dibenzylphosphono-2,2-dimethyl propyl nitroxide 261527-17-7, N-tert-Butyl-1-di(2,2,2-trifluoroethyl)phosphono-2,2-dimethyl propyl nitroxide  
(manufacture of propylene polymers with increased melt flow by degradation with polymerization catalysts and incorporation of nitroxyl radicals)

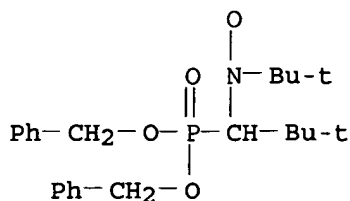
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)

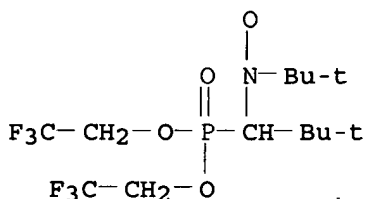


RN 188707-72-4 HCAPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl  
1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 261527-17-7 HCAPLUS

CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl  
1,1-dimethylethyl (9CI) (CA INDEX NAME)

IC ICM C08F008-50

CC 37-3 (Plastics Manufacture and Processing)

ST melt flow enhancement propylene polymer; **polymn**  
initiator degrading propylene polymer; nitroxyl incorporation  
propylene polymer

IT 2154-68-9, 3-Carboxy-2,2,5,5-tetramethylpyrrolidinyloxy 2226-96-2,  
TEMPOL 2516-92-9, Bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)  
sebacate 2525-39-5, 2,4,6-Tri-tert-butylphenoxy 2564-83-2, TEMPO  
2896-70-0, 4-Oxo-2,2,6,6-tetramethyl-1-piperidinyloxy 3229-53-6,  
2,2,5,5 Tetramethyl-1-pyrrolidinyloxy 61015-94-9,  
N-tert-Butyl-1-phenyl-2-methyl propyl nitroxide 95407-69-5,  
4-Methoxy-2,2,6,6-tetramethyl-1-piperidinyloxy 188526-94-5,  
N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide  
188707-72-4, N-tert-Butyl-1-dibenzylphosphono-2,2-dimethyl  
propyl nitroxide 200345-02-4, N-tert-Butyl-1-(2-naphthyl)-2-methyl  
propyl nitroxide 200345-03-5, N-Phenyl-1-diethylphosphono-2,2-  
dimethyl propyl nitroxide 200345-04-6, N-Phenyl-1-diethylphosphono-1-  
methyl ethyl nitroxide 200345-05-7, N-(1-Phenyl 2-methyl  
propyl)-1-diethylphosphono-1-methyl ethyl nitroxide 258354-63-1,  
N-tert-Butyl-[(1-diethylphosphono)-2-methylpropyl] nitroxide  
261527-17-7, N-tert-Butyl-1-di(2,2,2-trifluoroethyl)phosphono-  
2,2-dimethyl propyl nitroxide 263355-91-5 302906-69-0,  
N-(1-Phenylbenzyl)-[(1-diethylphosphono)-1-methyl ethyl] nitroxide  
(manufacture of propylene polymers with increased melt flow by degradation  
with polymerization catalysts and incorporation of nitroxyl radicals)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 48 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:610046 HCAPLUS

DOCUMENT NUMBER: 133:322182

TITLE: Synthesis of polystyrene-polyacrylate block  
copolymers by nitroxide-mediated radical  
polymerization

AUTHOR(S): Robin, Sophie; Gnanou, Yves

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques,  
ENSCP-CNRS-Universite Bordeaux 1, Talence,  
33402, Fr.

SOURCE: ACS Symposium Series (2000),  
768(Controlled/Living Radical Polymerization),  
334-346  
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

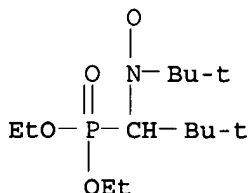
ED Entered STN: 03 Sep 2000

AB This paper discusses the conditions the best suited to the preparation of well defined polystyrene (PS)/poly(Bu acrylate) (PBuA), using the  $\beta$ -hydrogen-containing phosphonylated nitroxide N-tert-butyl-N-[1-(di-Et phosphono)-2,2-dimethylpropyl]nitroxyl. Using kinetic data to compute the rates of cross-addition and propagation of the second monomer, it is demonstrated that polymerizing Bu acrylate (BuA) before styrene should give rise to well defined PBuA-b-PS copolymer samples. This prediction was exptl. confirmed subsequently. When styrene was polymerized first, the copolymer formed was contaminated with a substantial amount of residual PS macroinitiator: the difference between the rates of cross-addition and propagation of BuA resulted in a fast growth of those of the PBuA blocks that were initiated, causing the medium to partition in mesophases with the residual PS precursor entrapped in the monomer-poor phase.

IT 188526-94-5  
(in preparation of styrene-Bu acrylate block copolymers by nitroxide-mediated radical polymerization)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**  
(block, radical; styrene-Bu acrylate block copolymn. by nitroxide-mediated radical polymerization)

IT 188526-94-5  
(in preparation of styrene-Bu acrylate block copolymers by nitroxide-mediated radical polymerization)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 49 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:610031 HCAPLUS

DOCUMENT NUMBER: 133:322146

TITLE: Use of phosphonylated nitroxides and alkoxyamines in controlled/"living" radical polymerization

AUTHOR(S): Le Mercier, C.; Lutz, J.-F.; Marque, S.; Le Moigne, F.; Tordo, P.; Lacroix-Desmazes, P.;

CORPORATE SOURCE: Boutevin, B.; Couturier, J.-L.; Guerret, O.;  
Martschke, R.; Sobek, J.; Fischer, H.  
Laboratoire de Structure et Reactivite des Especes  
Paramagnetiques, UMR 6517, CNRS et Universites  
d'Aix-Marseille 1 et 3, Marseille, 13397, Fr.

SOURCE: ACS Symposium Series (2000),  
768 (Controlled/Living Radical Polymerization),  
108-122  
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

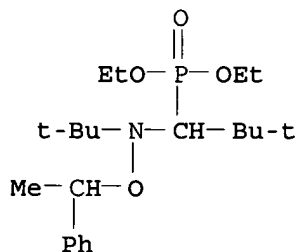
ED Entered STN: 03 Sep 2000

AB A review, with 53 refs., on stable  $\beta$ -phosphonylated nitroxides bearing a  $\beta$ -hydrogen and different corresponding alkoxyamines as catalysts for radical polymerization. The N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide (SG1), and the homolysis product, N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-(1-phenylethoxy) amine (I) radical, were used in controlled living polymerization of styrene. The use of either the bicomponent system (SG1 / AIBN) or the monocomponent I system resulted in reasonably fast and well controlled polymers. The equilibrium constant K for the reversible homolysis of I was much larger (450 times) than for the TEMPO analog 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine (II). This difference accounts for the fast kinetic and the negligible kinetic contribution of the thermal self initiation during the polymerization of styrene in the presence of I. The x-ray structures of I and II were determined and compared.

IT 224575-62-6P  
(kinetics and mechanism of controlled/living radical polymerization of styrene with phosphonylated nitroxide and alkoxyamine catalysts)

RN 224575-62-6 HCAPLUS

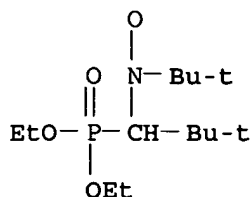
CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



IT 188526-94-5, tert-Butyl 1-(diethoxyphosphinyl)-2,2-dimethylpropyl nitroxide  
(kinetics and mechanism of controlled/living radical polymerization of styrene with phosphonylated nitroxide and alkoxyamine catalysts)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-0 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT **Polymerization catalysts**

Polymerization kinetics

(radical, living; kinetics and mechanism of controlled/living radical polymerization of styrene with phosphonylated nitroxide and alkoxyamine catalysts)

IT 224575-62-6P

(kinetics and mechanism of controlled/living radical polymerization of styrene with phosphonylated nitroxide and alkoxyamine catalysts)

IT 188526-94-5, tert-Butyl 1-(diethoxyphosphinyl)-2,2-

dimethylpropyl nitroxide

(kinetics and mechanism of controlled/living radical polymerization of styrene with phosphonylated nitroxide and alkoxyamine catalysts)

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 50 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:593981 HCAPLUS

DOCUMENT NUMBER: 133:297016

TITLE: Macromolecular engineering using novel alkoxyamines

AUTHOR(S): Granou, Yves; Robin, Sophie; Guerrer, O.; Couturier, J. L.

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques, ENSCPB-CNRS-Universite Bordeaux 1 (UMR 5629), Talence, 33402, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2000), 41(2), 1352-1353

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 27 Aug 2000

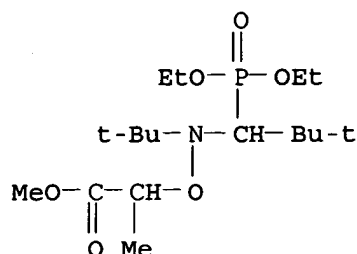
AB Mono, di, and trifunctional alkoxyamines based on N-tert-butyl-N-(1-diethylphosphono-2,2-dimethyl)propyl nitroxide were used to polymerize styrene and Bu acrylate, affording well-defined of linear and star structures. Triblock as well as star block copolymers constituted of poly(Bu acrylate) inner part and polystyrene outer shell were subsequently synthesized by sequentially polymerization of these two monomers, using dialkoxyamine and trialkoxyamine as initiators.

IT 300811-93-2

(catalysts; polymerization of styrene and Bu acrylate in presence of alkoxyamine catalysts)

RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (CA INDEX NAME)



CC 37-3 (Plastics Manufacture and Processing)  
 IT Polymerization catalysts  
 (polymerization of styrene and Bu acrylate in presence of alkoxyamine catalysts)  
 IT 300811-93-2 300811-94-3 300811-95-4  
 (catalysts; polymerization of styrene and Bu acrylate in presence of alkoxyamine catalysts)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 51 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:592727 HCAPLUS

DOCUMENT NUMBER: 133:177640

TITLE: Alkoxyamines derived from phosphorus-containing nitroxides and their use

INVENTOR(S): Couturier, Jean-Luc; Henriet-Bernard, Christiane; Le Mercier, Christophe; Tordo, Paul; Lutz, Jean-Francois

PATENT ASSIGNEE(S): Elf Atochem S.A., Fr.

SOURCE: PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000049027	A1	20000824	WO 2000-FR335	20000210
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FR 2789991	A1	20000825	FR 1999-1998	19990218
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FR 2789991	B1	20020222		
EP 1153030	A1	20011114	EP 2000-903787	20000210
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EP 1153030	B1	20020911		
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PT, IE, SI, LT, LV, FI, RO				
AT 223922	T	20020915	AT 2000-903787	20000210
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JP 2002537304	T	20021105	JP 2000-599765	20000210
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ES 2182777	T3	20030316	ES 2000-903787	20000210
			<--	
MX 2001PA08416	A	20020108	MX 2001-PA8416	20010820
			<--	
US 6569967	B1	20030527	US 2002-913940	20020319
			<--	
PRIORITY APPLN. INFO.:			FR 1999-1998	A 19990218
			<--	
			WO 2000-FR335	W 20000210
			<--	

OTHER SOURCE(S): MARPAT 133:177640

ED Entered STN: 25 Aug 2000

AB R4R5P(:O)CR1R2NR3OZ [R1, R2 = C1-10 alkyl, aryl, C≤10 aralkyl; R1R2 = C2-7 hydrocarbylene; R3 = C1-30 hydrocarbyl; R4, R5 = C≤20 cycloalkyl, C≤20 aryl, C≤20 alkoxy, C≤20 aryloxy, C≤20 aralkoxy, C≤20 perfluoroalkyl, C≤20 aralkyl, C≤20 thioalkyl; R4R5 = C2-6 hydrocarbylene, optionally, containing ≥1 of O or S; Z = CF3(CF2)5, Me2C(CN), or CR6R7R7; R6, R6, R7 = H, CN, C3-12 cycloalkyl, (CH2)nCO2R9; R9 = C1-6 alkyl; n = 0-6] are useful for initiators in radical polymerization A typical compound was manufactured by reaction of 4 mmol

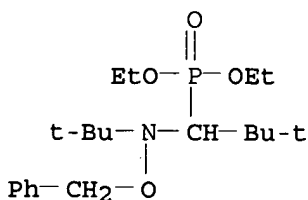
PhCHMeBr 48 h with 2 mmol (EtO)2P(:O)CH(CMe3)N(CMe3)O• in PhMe in the presence of CuBr and 2,2'-bipyridine.

IT 224575-61-5P 288583-05-1P 288583-07-3P  
288583-08-4P 288583-09-5P 288583-10-8P  
288583-75-5P 288583-76-6P 288583-77-7P  
288583-78-8P

(alkoxyamines derived from phosphorus-containing nitroxides for initiators for radical polymerization)

RN 224575-61-5 HCAPLUS

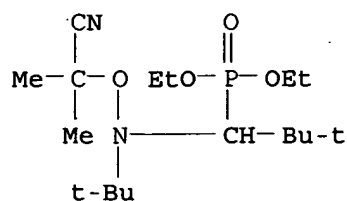
CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (phenylmethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 288583-05-1 HCAPLUS

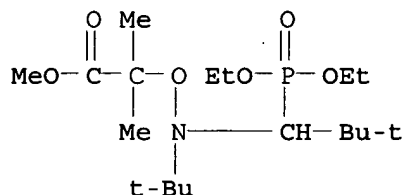
CN Phosphonic acid, P-[1-[(1-cyano-1-methylethoxy) (1,1-dimethylethyl) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)





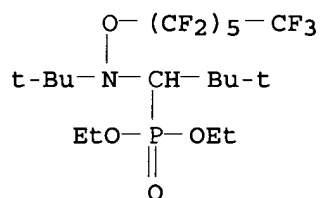
RN 288583-07-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, methyl ester, 6-oxide (CA INDEX NAME)



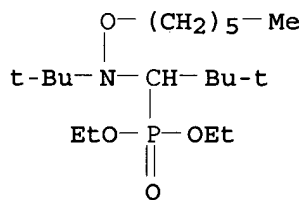
RN 288583-08-4 HCAPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)[(tridecafluorohexyl)oxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



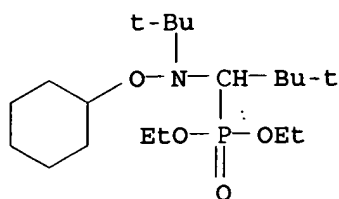
RN 288583-09-5 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(hexyloxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 288583-10-8 HCAPLUS

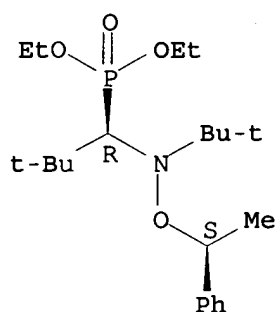
CN Phosphonic acid, P-[1-[(cyclohexyloxy)(1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 288583-75-5 HCAPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester, rel- (9CI)  
(CA INDEX NAME)

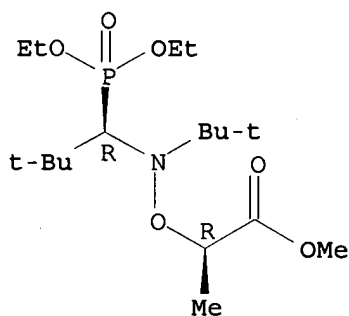
Relative stereochemistry.



RN 288583-76-6 HCAPLUS

CN 3,7-Dioxo-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5R)-rel- (CA INDEX NAME)

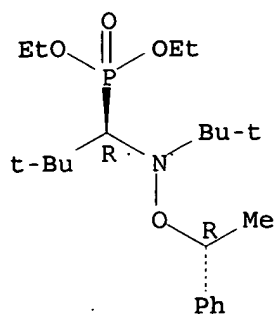
Relative stereochemistry.



RN 288583-77-7 HCAPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester, rel- (9CI)  
(CA INDEX NAME)

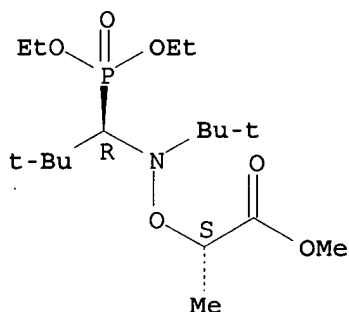
Relative stereochemistry.



RN 288583-78-8 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5S)-rel- (CA INDEX NAME)

Relative stereochemistry.

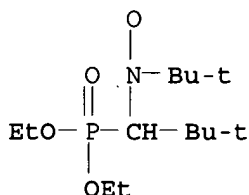


IT 188526-94-5P

(precursor; alkoxyamines derived from phosphorus-containing nitroxides for initiators for radical polymerization)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



IC ICM C07F009-40

ICS C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 29

IT **Polymerization catalysts**

(radical; alkoxyamines derived from phosphorus-containing nitroxides for initiators for radical polymerization)

IT 224575-61-5P 288583-05-1P 288583-07-3P

288583-08-4P 288583-09-5P 288583-10-8P

288583-75-5P 288583-76-6P 288583-77-7P

288583-78-8P

(alkoxyamines derived from phosphorus-containing nitroxides for initiators for radical polymerization)

IT 188526-94-5P

(precursor; alkoxyamines derived from phosphorus-containing nitroxides for initiators for radical polymerization)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 52 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:282694 HCAPLUS

DOCUMENT NUMBER: 133:43858

TITLE: N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide as counter radical in the controlled free radical polymerization of styrene: kinetic aspects

AUTHOR(S): Lacroix-Desmazes, Patrick; Lutz, Jean-Francois; Boutevin, Bernard

CORPORATE SOURCE: UMR 5076 (CNRS), Ecole Nationale Supérieure de Chimie de Montpellier, Montpellier, 34296, Fr.

SOURCE: Macromolecular Chemistry and Physics (2000), 201(6), 662-669

CODEN: MCHPES; ISSN: 1022-1352

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 03 May 2000

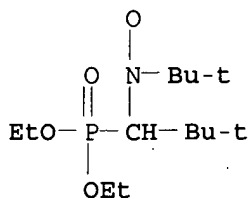
AB The controlled free radical polymerization of styrene with N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (DEPN) as counter radical was studied. Polymns. were performed in bulk, with a DEPN-capped polystyryl as alkoxyamine initiator, in the presence of an excess of DEPN nitroxyl free radicals. Kinetics of the polymerization were followed at 115, 125, and 130°C. The equilibrium rate constant  $K = k_d/k_c$  of exchange between dormant and active species was determined exptl. from the slope of  $\ln([styrene]_0/[styrene])$  vs. time. The obtained Arrhenius relation was the following:  $K(\text{mol} \cdot \text{L}^{-1}) = 1.45 + 107 \exp(-113.5 \text{ kJ} \cdot \text{mol}^{-1}/RT)$ , i.e.,  $K = 1.9 + 10^{-8} \text{ mol} \cdot \text{L}^{-1}$  at 125°C. This result is consistent with a much faster polymerization of styrene with DEPN than with Tempo as nitroxyl counter radical ( $K = 2.1 + 10^{-11} \text{ mol} \cdot \text{L}^{-1}$  at 125°C determined previously by Fukuda).

IT 188526-94-5

(counter radical in controlled radical polymerization of styrene)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(radical; nitroxide counter radical in controlled radical polymerization of styrene)

IT 188526-94-5

(counter radical in controlled radical polymerization of styrene)

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 53 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:227692 HCAPLUS

DOCUMENT NUMBER: 132:265619

TITLE: Process for the preparation of polymers containing N-O terminal groups

INVENTOR(S): Kramer, Andreas; Muhlebach, Andreas; Rime, Francois

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000018807	A1	20000406	WO 1999-EP6924	19990918
<--				
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2341384	A1	20000406	CA 1999-2341384	19990918
<--				
AU 9959794	A	20000417	AU 1999-59794	19990918
<--				
AU 752451	B2	20020919		
BR 9914104	A	20010731	BR 1999-14104	19990918
<--				
EP 1153043	A1	20011114	EP 1999-969724	19990918
<--				
EP 1153043	B1	20041013		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AT 279447	T	20041015	AT 1999-969724	19990918
<--				
US 6433100	B1	20020813	US 2001-763432	20010222
<--				
MX 2001PA02843	A	20010710	MX 2001-PA2843	20010319
<--				
PRIORITY APPLN. INFO.:			EP 1998-810979	A 19980929
<--				
			WO 1999-EP6924	W 19990918
<--				

ED Entered STN: 07 Apr 2000

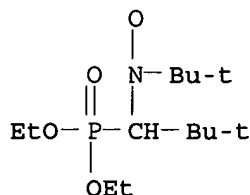
AB The invention relates to a process for the preparation of polymers containing

N→O terminal groups and to compns. comprising polymers obtained by this process. The process comprises polymerizing by atom transfer radical polymerization (ATRP) an aliphatic monomer of oligomer containing ethylene groups in the presence of a polymerization initiator containing a leaving group X to form an X-terminated polymer, then reacting with a compound contg an N→O group.

IT 188526-94-5DP, reaction products with poly(Bu acrylate)  
(process for the preparation of polymers containing N-O terminal groups)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



IC ICM C08F004-00  
ICS C08F002-38

CC 35-8 (Chemistry of Synthetic High Polymers)

IT 2516-92-9DP, reaction products with poly(Bu acrylate) 3225-26-1DP, reaction products with poly(Bu acrylate) 9003-49-0DP, Butylacrylate homopolymer, reaction products with amine oxides 14691-89-5DP, reaction products with poly(Bu acrylate) 188526-94-5DP, reaction products with poly(Bu acrylate) 244020-99-3DP, reaction products with poly(Bu acrylate) 258289-09-7DP, reaction products with poly(Bu acrylate) 263169-80-8DP, reaction products with poly(Bu acrylate)  
(process for the preparation of polymers containing N-O terminal groups)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 54 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:74962 HCAPLUS

DOCUMENT NUMBER: 132:222921

TITLE: Acyclic β-Phosphonylated Nitroxides: A New Series of Counter-Radicals for "Living"/Controlled Free Radical Polymerization

AUTHOR(S): Grimaldi, Sandra; Finet, Jean-Pierre; Le Moigne, Francois; Zeghdaoui, Abdelhamid; Tordo, Paul; Benoit, Didier; Fontanille, Michel; Gnanou, Yves

CORPORATE SOURCE: Laboratoire Structure et Reactivite des Especes Paramagnetiques UMR 6517 Chimie Biologie et Radicaux Libres, CNRS Universites d'Aix-Marseille I et III, Marseille, 13397, Fr.

SOURCE: Macromolecules (2000), 33(4), 1141-1147  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 01 Feb 2000

AB Oxidation of α-(N-alkylamino)phosphonic acid esters, carrying one or two alkyl groups as substituents on their α-carbon, by

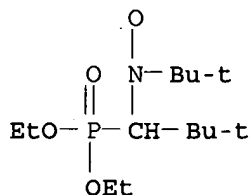
m-chloroperbenzoic acid afforded the corresponding stable  $\beta$ -phosphonylated nitroxides. The nitroxides derived from  $\alpha$ -mono-tert-Bu  $\alpha$ -alkylaminophosphonic acid esters are stable compds. despite the presence of a hydrogen atom on the  $\alpha$ -carbon bound to the nitroxyl group. The ESR study of these nitroxides in solution showed that this  $\beta$ -hydrogen atom lies in the nodal plane to the nitroxyl function. These  $\beta$ -phosphonylated nitroxides efficiently control the free radical polymerization reaction of styrene, with a much faster rate of propagation than that observed in TEMPO-mediated systems.

IT 188526-94-5P 188707-72-4P 261527-17-7P

(acyclic  $\beta$ -phosphonylated nitroxides as counter-radicals for living/controlled free radical polymerization)

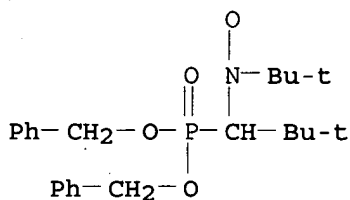
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



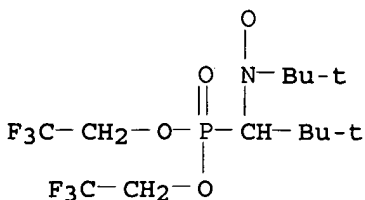
RN 188707-72-4 HCAPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 261527-17-7 HCAPLUS

CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

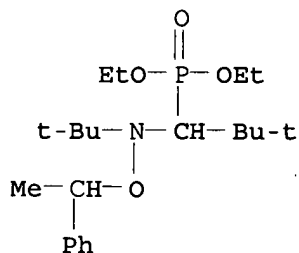
IT ESR (electron spin resonance)

**Polymerization catalysts**

(acyclic  $\beta$ -phosphonylated nitroxides as counter-radicals for living/controlled free radical polymerization)

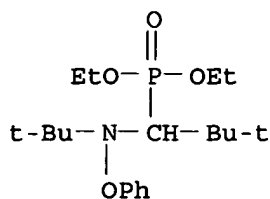
IT 188526-94-5P 188707-72-4P 258354-63-1P  
 261527-14-4P 261527-15-5P 261527-16-6P 261527-17-7P  
 (acyclic  $\beta$ -phosphonylated nitroxides as counter-radicals for  
 living/controlled free radical polymerization)  
 REFERENCE COUNT: 67 THERE ARE 67 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L35 ANSWER 55 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:558870 HCAPLUS  
 DOCUMENT NUMBER: 132:152196  
 TITLE: Synthesis of nitroxides and alkoxyamines used in  
 controlled/"living" radical polymerization  
 AUTHOR(S): Le Mercier, C.; Bernard-Henriet, C.; De Sainte  
 Claire, V.; Le Moigne, F.; Tordo, P.; Couturier,  
 J.-L.; Gillet, J.-Ph.; Guerret, O.  
 CORPORATE SOURCE: Laboratoire Structure et Reactivite des Especes  
 Paramagnetiques, CNRS et Universites  
 d'Aix-Marseille I et III, Marseille, 13397, Fr.  
 SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (1999),  
 40(2), 403-404  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 02 Sep 1999  
 AB In order to test their utility in controlled/living radical polymerization,  
 we have developed the synthesis of a series of 7 new acyclic  
 $\beta$ -phosphonylated nitroxides and their corresponding alkoxyamines.  
 Several of these compds. were used to control the radical preparation of  
 polystyrene.  
 IT 224575-62-6P 258354-76-6P 258354-78-8P  
 (preparation of acyclic  $\beta$ -phosphonylated alkoxyamines for control  
 of radical polymerization)  
 RN 224575-62-6 HCAPLUS  
 CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-  
 dimethylpropyl]-, diethyl ester (CA INDEX NAME)



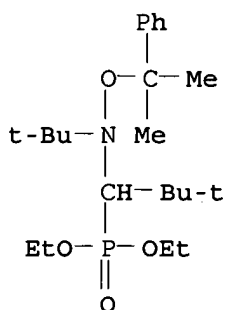
RN 258354-76-6 HCAPLUS  
 CN Phosphonic acid, [1-[(1,1-dimethylethyl)phenoxyamino]-2,2-  
 dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)





RN 258354-78-8 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-methyl-1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)

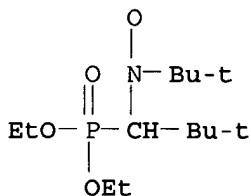


IT 188526-94-5P

(preparation of acyclic  $\beta$ -phosphonylated nitroxides for control of radical polymerization)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)

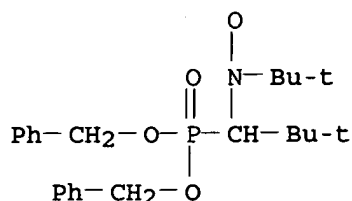


IT 188707-72-4P

(preparation of acyclic  $\beta$ -phosphonylated nitroxides for control of radical polymerization)

RN 188707-72-4 HCAPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(living, radical; preparation of acyclic  $\beta$ -phosphonylated nitroxides and alkoxyamines for control of radical polymerization)

IT 224575-62-6P 258354-72-2P 258354-74-4P

258354-76-6P 258354-78-8P

(preparation of acyclic  $\beta$ -phosphonylated alkoxyamines for control of radical polymerization)

IT 188526-94-5P 258354-66-4P 258354-67-5P

(preparation of acyclic  $\beta$ -phosphonylated nitroxides for control of radical polymerization)

IT 188707-72-4P 258354-63-1P 258354-64-2P 258354-65-3P

(preparation of acyclic  $\beta$ -phosphonylated nitroxides for control of radical polymerization)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 56 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:558862 HCAPLUS

DOCUMENT NUMBER: 132:152191

TITLE: Polystyrene/polyacrylate block copolymer synthesis using an acyclic  $\beta$ -phosphonylated nitroxide

AUTHOR(S): Robin, Sophie; Gnanou, Yves

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques, ENSCPB-CNRS Universite Bordeaux, Talence, 33402, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 387-388

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Sep 1999

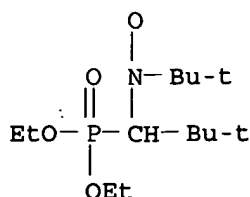
AB Well defined Bu acrylate-styrene diblock copolymers could be synthesized in the presence of N-tert-butyl-N-[1-(diethylphosphono)-2,2-dimethylpropyl]nitroxide and AIBN by either order of addition of monomers, provided that the exptl. conditions were finely tuned.

IT 188526-94-5

(radical block polymerization using phosphonylated nitroxide as chain growth controller)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(block, radical; AIBN using phosphonylated nitroxide as chain growth controller)

IT 188526-94-5

(radical block polymerization using phosphonylated nitroxide as chain growth controller)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 57 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:558828 HCAPLUS

DOCUMENT NUMBER: 132:152182

TITLE: Nitroxide-mediated controlled free-radical emulsion polymerization of styrene

AUTHOR(S): Lansalot, M.; Charleux, B.; Vairon, J.-P.; Pirri, R.; Tordo, P.

CORPORATE SOURCE: Laboratoire de Chimie Macromoléculaire, Université Pierre et Marie Curie, Paris, 75252, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 317-318

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Sep 1999

AB The N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) stable nitroxide radical (SG1) was used to control the free-radical polymerization of styrene in an aqueous medium. Batch mini-emulsion and emulsion polymerization

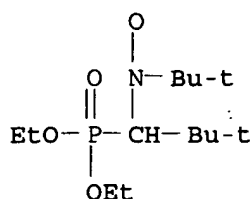
processes were used; the initiators are AIBN and water soluble redox initiator K2S2O8 / Na2S2O5. One of the advantages of a mini-emulsion process is that it enables to use organosol. initiators, while maintaining small particle size. Various initiating systems were used and the reaction temperature was 90-130°. The kinetics and the evolution of mol. weight vs. monomer conversion were compared with those observed in bulk polymerization

IT 188526-94-5

(radical polymerization control catalyst; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymerization of styrene in aqueous media)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT **Polymerization catalysts**

(emulsion, radical; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymerization of styrene in aqueous media)

IT 188526-94-5

(radical polymerization control catalyst; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymerization of styrene in aqueous media)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 58 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:558826 HCAPLUS

DOCUMENT NUMBER: 132:152181

TITLE: Characteristics of phosphonylated nitroxides and alkoxyamines used in controlled/ "living" radical polymerizations

AUTHOR(S): Le Mercier, C.; Gaudel, A.; Siri, D.; Tordo, P.; Marque, S.; Martschke, R.; Fischer, H.

CORPORATE SOURCE: Laboratoire Structure et Reactivite des Especes Paramagnetiques, CNRS et Universites d'Aix-Marseille, Marseille, 13397, Fr.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 313-314

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Sep 1999

AB The kinetic parameters were determined of the reversible cleavage of alkoxyamines obtained by trapping the 1-phenyl-Et radical with TEMPO and N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide [t-BuN(O)CH(t-Bu)P(O)(OEt)<sub>2</sub>]. The alkoxyamines are derivs. of the N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical, e.g., 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine (I) and [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl] di-Et phosphonate (II). The equilibrium constant (K<sub>eq</sub>) is much larger (460 times) for II than for I. The x-ray structure of I and II and the BDE [bond dissociation energy] of the NO-C bond were determined

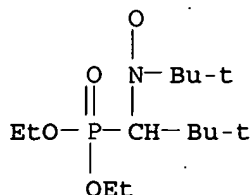
IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical 224575-61-5

224575-62-6

(cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymerization mechanisms)

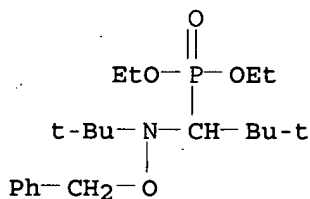
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



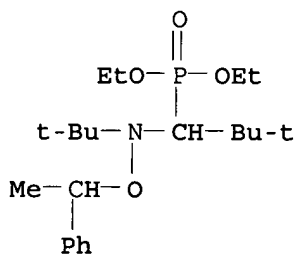
RN 224575-61-5 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (phenylmethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 224575-62-6 HCAPLUS

CN Phosphonic acid, P-[1-[(1,1-dimethylethyl) (1-phenylethoxy) amino]-2,2-dimethylpropyl]-, diethyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT **Polymerization catalysts**

(living, radical; cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymerization mechanisms)

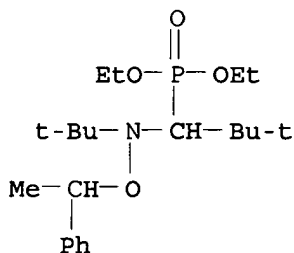
IT 2564-83-2, TEMPO 102261-92-7, N-Benzyloxy-2,2,6,6-tetramethylpiperidine 154554-67-3, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine 157462-14-1 **188526-94-5**, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical **224575-61-5 224575-62-6**

(cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymerization mechanisms)

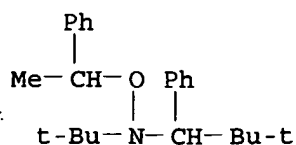
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 59 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

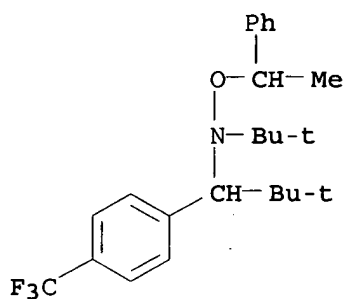
ACCESSION NUMBER: 1999:234532 HCAPLUS  
 DOCUMENT NUMBER: 131:45141  
 TITLE: Development of a Universal Alkoxyamine for  
 "Living" Free Radical Polymerizations  
 AUTHOR(S): Benoit, Didier; Chaplinski, Vladimir; Braslau,  
 Rebecca; Hawker, Craig J.  
 CORPORATE SOURCE: NSF Center for Polymeric Interfaces and  
 Macromolecular Assemblies, IBM Almaden Research  
 Center, San Jose, CA, 95120-6099, USA  
 SOURCE: Journal of the American Chemical Society (  
 1999), 121(16), 3904-3920  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 16 Apr 1999  
 AB Examination of novel alkoxyamines has demonstrated the pivotal role that  
 the nitroxide plays in mediating the "living" or controlled polymerization of  
 a wide range of vinyl monomers. Surveying a variety of different  
 alkoxyamine structures led to  $\alpha$ -hydrido derivs. based on a  
 2,2,5-trimethyl-4-phenyl-3-azahexane-3-oxy, 1, skeleton which were  
 able to control the polymerization of styrene, acrylate, acrylamide, and  
 acrylonitrile based monomers. For each monomer set, the mol. weight  
 could be controlled from 1000 to 200,000 amu with polydispersities  
 typically 1.05-1.15. Block and random copolymers based on  
 combinations of the above monomers could also be prepared with similar  
 control. In comparison with 2,2,6,6-tetramethylpiperidinoxy (TEMPO),  
 these new systems represent a dramatic increase in the range of  
 monomers that can be polymerized under controlled conditions and overcome  
 many of the limitations associated with nitroxide-mediated "living" free  
 radical procedures. Monomer selection and functional group  
 compatibility now approach those of ATRP-based systems.  
 IT 224575-62-6 227000-79-5 227000-83-1  
 (alkoxyamine-mediated living free radical polymerization of styrene and  
 acrylic compds.)  
 RN 224575-62-6 HCAPLUS  
 CN Phosphonic acid, P-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-  
 dimethylpropyl]-, diethyl ester (CA INDEX NAME)



RN 227000-79-5 HCAPLUS  
 CN Benzenemethanamine, N, $\alpha$ -bis(1,1-dimethylethyl)-N-(1-  
 phenylethoxy)- (CA INDEX NAME)



RN 227000-83-1 HCAPLUS

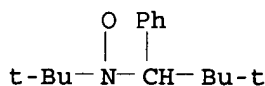
CN Benzenemethanamine, N, $\alpha$ -bis(1,1-dimethylethyl)-N-(1-phenylethoxy)-4-(trifluoromethyl)- (9CI) (CA INDEX NAME)

IT 53544-93-7P 188526-94-5P 226999-92-4P

(in alkoxyamine preparation; alkoxyamine-mediated living free radical polymerization of styrene and acrylic compds.)

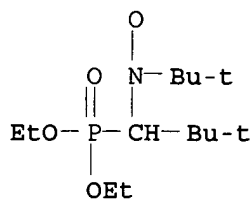
RN 53544-93-7 HCAPLUS

CN Nitroxide, 1,1-dimethylethyl 2,2-dimethyl-1-phenylpropyl (9CI) (CA INDEX NAME)



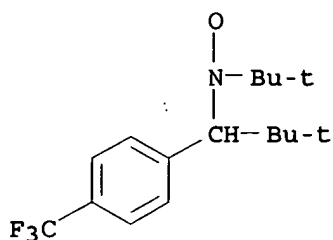
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (CA INDEX NAME)



RN 226999-92-4 HCAPLUS

CN Nitroxide, 1,1-dimethylethyl 2,2-dimethyl-1-[4-(trifluoromethyl)phenyl]propyl (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization

**Polymerization catalysts**

(living, radical; alkoxyamine-mediated living free radical polymerization of styrene and acrylic compds.)

IT 132416-36-5 154554-67-3 183194-54-9 188491-78-3 219908-58-4

219908-68-6 224575-62-6 224967-65-1 227000-59-1

227000-69-3 227000-79-5 227000-80-8 227000-81-9

227000-83-1 227000-84-2 227000-85-3 227000-86-4

227000-87-5 227000-88-6 227000-89-7 227000-90-0

(alkoxyamine-mediated living free radical polymerization of styrene and acrylic compds.)

IT 53544-93-7P 56859-56-4P 61015-94-9P 72331-68-1P

85664-55-7P 140116-61-6P 140116-62-7P 188526-94-5P

226999-86-6P 226999-92-4P 226999-99-1P 227000-10-4P

227000-16-0P 227000-22-8P 227000-39-7P 227000-46-6P

(in alkoxyamine preparation; alkoxyamine-mediated living free radical polymerization of styrene and acrylic compds.)

REFERENCE COUNT: 101 THERE ARE 101 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L35 ANSWER 60 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:111881 HCAPLUS

DOCUMENT NUMBER: 128:141095

TITLE: Controlled/living free-radical polymerization of  
styrene and n-butyl acrylate in the presence of a  
novel asymmetric nitroxyl radical

AUTHOR(S): Benoit, D.; Grimaldi, S.; Finet, J. P.; Tordo, P.;  
Fontanille, M.; Gnanou, Y.

CORPORATE SOURCE: Laboratoire de Chimie des Polymeres Organiques UMR  
Centre National de la Recherche Scientifique,  
Ecole Nationale Supérieure de Chimie et de  
Physique de Bordeaux, Université Bordeaux I,  
Talence, 33402, Fr.

SOURCE: ACS Symposium Series (1998),  
685(Controlled Radical Polymerization), 225-235  
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 25 Feb 1998

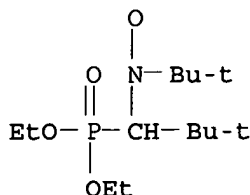
AB A novel nitroxyl radical containing a di-Et phosphonate group in the  
β-position to the nitrogen atom has been used as radical  
scavenger in free radical polymerization. In the presence of this stable  
free-radical, styrene and Bu acrylate undergo controlled living  
polymerization. The samples of polystyrene and poly (Bu acrylate) obtained  
exhibit a narrow Poisson-type distribution of molar masses.



IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical  
(controlled living free-radical polymerization of styrene and Bu acrylate in presence of di-Et phosphonate group-containing nitroxyl radical)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

Polymerization catalysts

(living, radical; controlled living free-radical polymerization of styrene and Bu acrylate in presence of di-Et phosphonate group-containing nitroxyl radical)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical

(controlled living free-radical polymerization of styrene and Bu acrylate in presence of di-Et phosphonate group-containing nitroxyl radical)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 61 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:1511 HCAPLUS

DOCUMENT NUMBER: 128:61941

TITLE: Preparing telechelic 1,3-diene oligomers by controlled free radical polymerization of 1,3-dienes in the presence of a stable free radical

INVENTOR(S): Boutevin, Bernard; Cerf, Martine; Pradel, Jean-Laurent

PATENT ASSIGNEE(S): Elf Atochem S.A., Fr.; Boutevin, Bernard; Cerf, Martine; Pradel, Jean-Laurent

SOURCE: PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9746593	A1	19971211	WO 1997-FR973	19970603

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W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR,

GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM,  
GA, GN, ML, MR, NE, SN, TD, TG

CA 2229978	A1	19971211	CA 1997-2229978	19970603
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AU 9730982	A	19980105	AU 1997-30982	19970603
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EP 842198	A1	19980520	EP 1997-926089	19970603
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R: DE, FR, GB, IT				
CN 1198750	A	19981111	CN 1997-191040	19970603
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BR 9702291	A	19990720	BR 1997-2291	19970603
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JP 11511202	T	19990928	JP 1997-500271	19970603
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PRIORITY APPLN. INFO.:			FR 1996-6875	A 19960604
			<--	
			WO 1997-FR973	W 19970603
			<--	

ED Entered STN: 02 Jan 1998

AB The free radical polymerization of  $\geq 1$  1,3-diene with a heat-sensitive **polymerization initiator** such as H<sub>2</sub>O<sub>2</sub> or an azodinitrile in the presence of a stable nitroxide radical yields telechelic 1,3-diene oligomers, which can be used in the preparation of block copolymers. Thus, 1 mol butadiene was introduced into a reactor containing 30% H<sub>2</sub>O<sub>2</sub> 9.07, 2,2,6,6-tetramethylpiperidinyloxy 1.88, and iso-PrOH 33.7 g at -40°, and the reactor was heated at 130° for 4 h to give HO- and tetramethylpiperidinyloxy-terminated polybutadiene with 80% 1,4- and 20% 1,2-structure and number-average mol. weight 1700. Heating this product with Zn powder in AcOH gave a hydroxy-terminated polybutadiene of number-average mol. weight 1700 and functionality 2, whereas polymerization

with

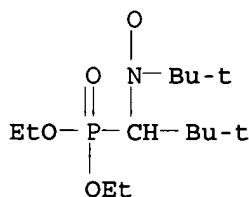
H<sub>2</sub>O<sub>2</sub> in the absence of the nitroxide led to higher mol. weight and functionality 2.35.

IT 188526-94-5 188707-72-4

(in preparation of telechelic diene oligomers)

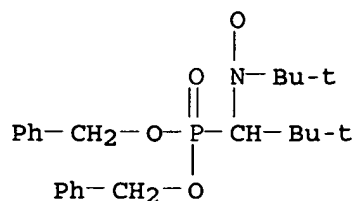
RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
(CA INDEX NAME)



RN 188707-72-4 HCAPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl  
1,1-dimethylethyl (9CI) (CA INDEX NAME)



IC ICM C08F004-28

ICS C08F002-38; C08F136-04

CC 35-4 (Chemistry of Synthetic High Polymers)

IT 2564-83-2, 2,2,6,6-Tetramethylpiperidinyloxy 3229-53-6,  
 2,2,5,5-Tetramethylpyrrolidinyloxy 61015-94-9 188526-94-5  
 188707-72-4 200345-02-4 200345-03-5 200345-04-6  
 200345-05-7

(in preparation of telechelic diene oligomers)

L35 ANSWER 62 OF 62 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:224565 HCAPLUS

DOCUMENT NUMBER: 126:238706

TITLE: Controlled free-radical polymerization in the  
 presence of a novel asymmetric nitroxyl radical  
 AUTHOR(S): Benoit, Didier; Grimaldi, Sandra; Finet, Jean  
 Pierre; Tordo, Paul; Fontanille, Michel; Gnanou,  
 Yves

CORPORATE SOURCE: Lab. Chimie Polymers Organiques, UMR  
 CNRS-ENSCP-Univ. Bordeaux I, Talence, 33402, Fr.  
 SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (1997),  
 38(1), 729-730

CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

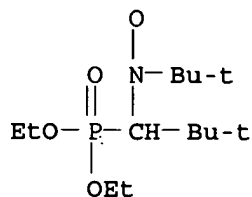
ED Entered STN: 07 Apr 1997

AB An analog of di-tert-Bu nitroxyl (DTBN) radical, with a functional  
 group purposely introduced to induce both electronic and steric  
 effects, was used in controlled living free-radical polymerization of various  
 monomers. N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl  
 (DEPN) is a stable radical that increases the rate of polymerization of  
 styrene better than that mediated by DTBN, yet provides excellent  
 control of mol. weight distribution to obtain polymers of low  
 polydispersity index. DEPN also is suitable as reversible trapping  
 agent for alkyl acrylates, through fully controlled processes. Di-  
 and triblock copolymers based on polystyrene and poly(alkyl acrylates)  
 were obtained by sequential polymerization of the corresponding monomers.

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-  
 dimethylpropyl nitroxyl radical  
 (polymerization control; controlled free-radical polymerization of styrene  
 and  
 alkyl acrylates with asym. nitroxyl radical reversible trapping  
 agent)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl  
 (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT **Polymerization catalysts**

(living, radical, trapping agents; controlled free-radical polymerization of styrene and alkyl acrylates with asym. nitroxyl radical reversible trapping agent)

IT **Polymerization inhibitors**

(radical, trapping agents; controlled free-radical polymerization of styrene and alkyl acrylates with asym. nitroxyl radical reversible trapping agent)

IT 2406-25-9, DTBN 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical

(polymerization control; controlled free-radical polymerization of styrene

and

alkyl acrylates with asym. nitroxyl radical reversible trapping agent)

=> d his nofile

(FILE 'HOME' ENTERED AT 10:41:03 ON 18 SEP 2007)

FILE 'HCAPLUS' ENTERED AT 10:41:22 ON 18 SEP 2007

L1 1 SEA ABB=ON PLU=ON US20060058467/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 10:41:38 ON 18 SEP 2007

L2 11 SEA ABB=ON PLU=ON (188526-94-5/BI OR 25035-68-1/BI OR  
25036-16-2/BI OR 29407-83-8/BI OR 300811-93-2/BI OR  
30970-31-1/BI OR 31671-56-4/BI OR 702659-07-2/BI OR  
702659-09-4/BI OR 702659-10-7/BI OR 702659-11-8/BI)  
L3 2 SEA ABB=ON PLU=ON L2 AND 1/P

FILE 'HCAPLUS' ENTERED AT 11:18:52 ON 18 SEP 2007

L4 177 SEA ABB=ON PLU=ON L3  
L5 1 SEA ABB=ON PLU=ON L1 AND L4  
L6 10 SEA ABB=ON PLU=ON L4 AND GRADIENT(2A) COPOLYMER?

FILE 'REGISTRY' ENTERED AT 11:19:54 ON 18 SEP 2007

L7 STR  
L8 STR  
L9 5 SEA SSS SAM L8  
L10 STR L8  
L11 7 SEA SSS SAM L10  
L12 165 SEA SSS FUL L10  
L13 2 SEA ABB=ON PLU=ON L12 AND L2  
SAV L12 BER730/A

FILE 'HCAPLUS' ENTERED AT 11:45:10 ON 18 SEP 2007

L14 230 SEA ABB=ON PLU=ON L12  
L15 1 SEA ABB=ON PLU=ON L14 AND L1  
L16 165 SEA ABB=ON PLU=ON L14 AND POLYMER?/SC, SX  
E POLYMERIZATION CATALYSTS/CT  
L17 138999 SEA ABB=ON PLU=ON "POLYMERIZATION CATALYSTS"+PFT,NT,OLD,N  
EW/CT  
L18 103 SEA ABB=ON PLU=ON L16 AND L17  
L19 95 SEA ABB=ON PLU=ON L18 AND CAT/RL  
L20 52 SEA ABB=ON PLU=ON L19 AND (1840-2003)/PRY,AY,PY  
L21 132 SEA ABB=ON PLU=ON L4 AND CAT/RL  
L22 92 SEA ABB=ON PLU=ON L21 AND L17  
L23 50 SEA ABB=ON PLU=ON L22 AND (1840-2003)/PRY,AY,PY  
L24 55 SEA ABB=ON PLU=ON L20 OR L23  
L25 3 SEA ABB=ON PLU=ON L24 AND GRADIENT(2A) COPOLYMER?  
L26 10 SEA ABB=ON PLU=ON L14 AND GRADIENT(2A) COPOLYMER?  
L27 3 SEA ABB=ON PLU=ON L26 AND (1840-2003)/PRY,AY,PY  
L28 55 SEA ABB=ON PLU=ON L24 OR L25 OR L27  
L29 148 SEA ABB=ON PLU=ON L14 (L) CAT/RL  
L30 102 SEA ABB=ON PLU=ON L29 AND L17  
L31 89 SEA ABB=ON PLU=ON L30 AND POLYMER?/SC, SX  
L32 4 SEA ABB=ON PLU=ON L31 AND POLYMERIZATION INITIATOR?  
L33 17 SEA ABB=ON PLU=ON L14 AND POLYMERIZATION INITIATOR?  
L34 10 SEA ABB=ON PLU=ON L33 AND (1840-2003)/PRY,AY,PY  
L35 62 SEA ABB=ON PLU=ON L28 OR L34